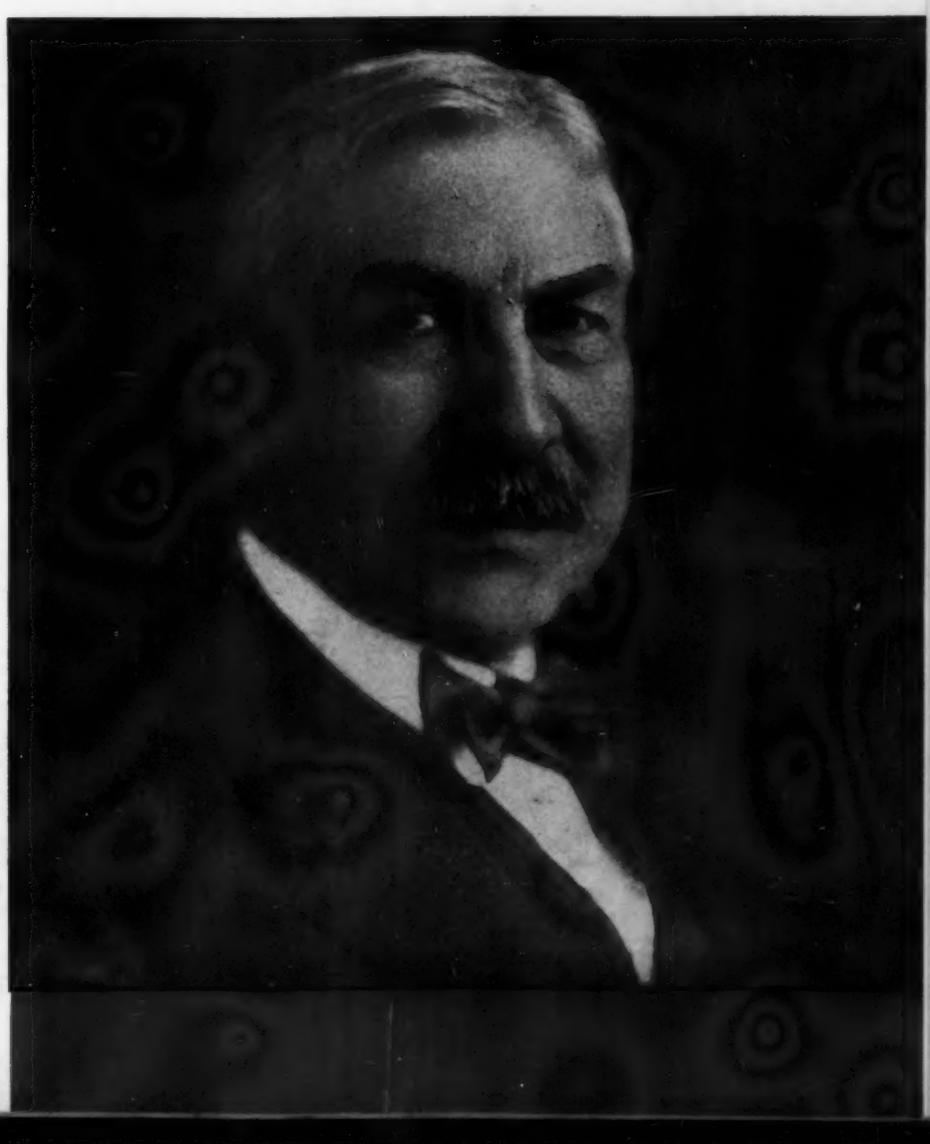
TELEPHONE ENGINEER

THE INTERNATIONAL TECHNICAL JOURNAL



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W. G. BROREIN, President
Peninsular (Fla.)
Telephone Co.
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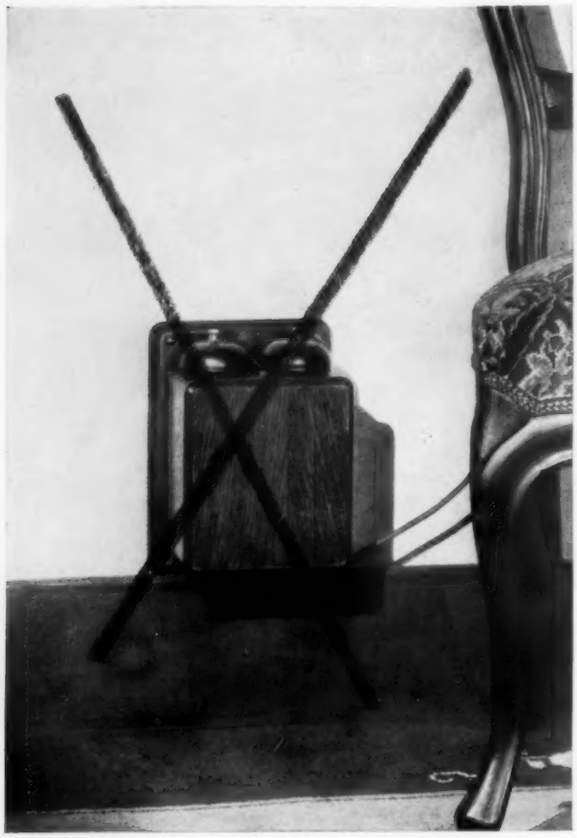
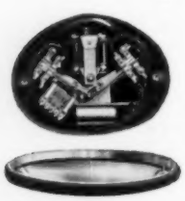


"X" *marks the box* **that no longer spots the wall."**



Stromberg-Carlson 1191 Handset . . . ringer, induction coil and condenser mounted in base of instrument, making it completely self-contained and doing away with desk set box.

For years, the bell box has been an unsightly object which subscribers endeavored to hide behind tables or other pieces of furniture.

The *new* Stromberg-Carlson 1191 Handset . . . no larger than the usual handset . . . does away completely with the desk set box. It is completely self-contained. The ringer, induction coil and condenser are mounted in the base of the instrument.

Moreover, the instrument is a delight to use. It is perfectly balanced, light in weight and sets a new standard for transmission efficiency. That is why subscribers are glad to pay the additional monthly charge for this type of service. While it brings the operating company added revenue, it costs less to install and maintain, as there is but one instrument instead of two. You will be enthusiastic over the many advantages of this new instrument if you will order a sample and test it under your own conditions.

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY

FACTORY AND GENERAL OFFICES: 100 CARLSON ROAD, ROCHESTER, N. Y., U. S. A. BRANCH OFFICES: CHICAGO, KANSAS CITY, SAN FRANCISCO, LOS ANGELES, SEATTLE, TORONTO, ATLANTA

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MAKERS OF VOICE TRANSMISSION AND VOICE RECEPTION APPARATUS FOR MORE THAN FORTY YEARS

Telephone Engineer

A MONTHLY SERVING ENTIRE TELEPHONE INDUSTRY

30-DAY LIFE FOR READERS AND ADVERTISERS

The International Technical Journal

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It's Just Our Job

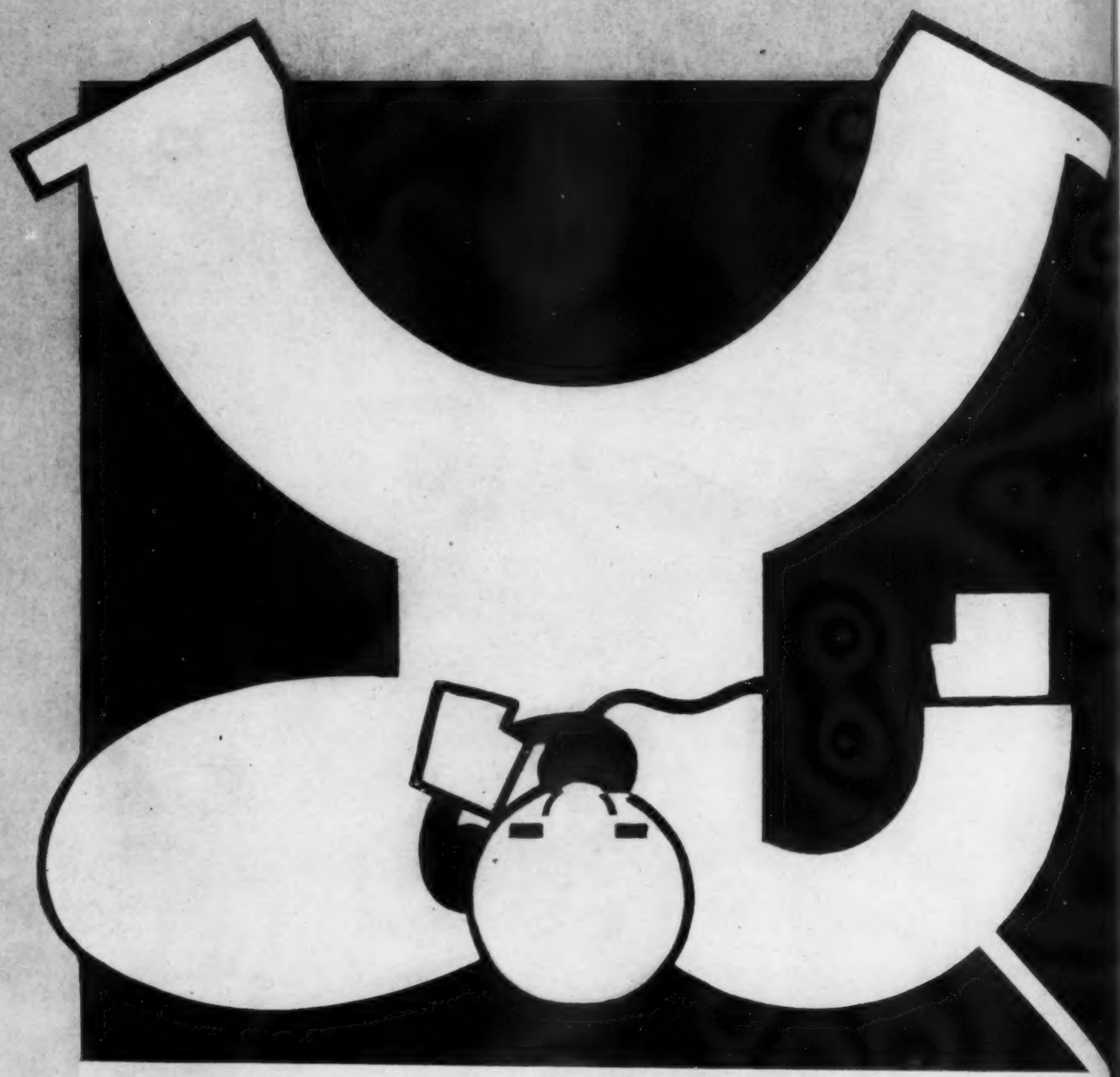
"You are, indeed, to be congratulated for the very artistic design of the new front cover of your valuable magazine. It is very attractive and in keeping with these modernistic times. Another great improvement is in the new style of type, which you are now using. It makes for easier and more enjoyable reading.

"Your progressiveness is truly in complete harmony with the especially fine and worth while technical, practical, social, editorial and news features, for which Telephone Engineer has always been noted, more so in recent years. Judging from many very valuable comments, your magazine makes interesting reading for everybody engaged in telephone work, manufacturers and suppliers, as well as telephone operating folk.

"You certainly deserve much credit for doing a splendid job and telephone people everywhere are very grateful and appreciative of the fine work you are doing in behalf of the industry."

H. W. Hubenthal,
Engineer, Oklahoma Utilities Association.

On YOUR HEA



KELLOGG SWITCHBOARD & SUPPLY CO. CHICA

EDITORIAL

Real Worth of the Telephone

Americans grumble so much about street and sidewalk congestion that it is a relief to be reminded occasionally of the horrible fates we have escaped. More than a crumb of comfort is furnished by visioning the conditions that would exist were some of the modern time-saving and congestion-eliminating devices taken away.

Picture an American city without telephones. There would be millions of messages to deliver somehow. If they were carried by hand, the messenger boys would doubtless be piled in business streets like snowdrifts, roof high. And think what would happen if all the senders turned out to see why their messages had not reached their destination.

If there is a moment's delay in making a telephone connection, the subscriber is loud in protest against inefficient service. He might not be so quick to complain if he realized that without the telephone he might have to make the connection on foot.

Imagine, if you can, the confusion and annoyance that would be occasioned by trying to take care of modern traffic on the narrow earth roads and unpaved city streets which the pioneer motorist used in the absence of anything better.

All in all the nation, even in the most congested centers of population, makes fairly good progress, and communication and transportation systems operate with surprising expedition under all the circumstances.— St. Joseph (Mich.) Herald.

- Based on—
- Its Service
- Its Convenience
- Its Comfort
- Its Protection

R. C. Rems

EDITOR

The Telephone Business As We See It

W. Roy McCanne It was with deep sorrow and emotion that the telephone fraternity learned of the death of W. Roy McCanne. Few men have given more to the development and stability of the telephone industry than Mr. McCanne contributed.

A typical example of keen American business ability, Mr. McCanne's guiding influence and leadership will be sorely missed in our industry.

His achievements as president of his own company, the Stromberg-Carlson Telephone Manufacturing Company, led to his eminence in both the telephone and radio industry and the winning of government recognition as a spokesman for its interest.

The city of Rochester has lost a great leader as exemplified in an editorial from the Rochester Democrat and Chronicle which said: "Mr. McCanne's business achievements were absorbing and burdensome enough to take all one man's time and strength, but he gave of himself indefatigably in service for the community as well."

Above all, we who knew him personally honored, admired and loved him and will never forget him because of his kindly, winning personality.

▲ ▲ ▲

New State Telephone Associations Telephone men in Kentucky, West Virginia and Virginia should welcome the opportunity of uniting and binding themselves together in the form of state associations which were organized in those states last month.

In these uncertain legislative times, unity and co-operation is vital to the welfare of the Independent telephone industry, and the best protection it can have. Today there is a need for a closer union of the Independent interests, a better understanding of each other's problems and a means of education and of dispensing telephone information. State associations fulfill this need.

Memberships in state associations carry with them full memberships in the National Association without additional cost for companies having an annual income less than $50,000 per year. This feature makes state association memberships doubly valuable as it keeps the holders actively in touch with both national and state affairs and gives them representation in both capitals.

Telephone men everywhere should consider it is a duty to actively support their state associations.

Advancement Under Private Enterprise The United States has 56% of the world's total of telephones. No stronger statement or proof could be given to justify the operation of public utilities by private enterprise.

Large and small investments of hundreds of thousands of citizens have made it possible for this nation to reach a telephone density of 15.8 telephones for each 100 residents, or nearly eight times the density in Europe. United States communities of less than 50,000 population average 11.8 telephones for each 100 people.

And in reaching this density, private enterprise has given telephone investors a fair return on their money, it gives the best telephone service in the world and it eliminates any possibility of taxpayers having to make up a deficit incurred in the operation of the utility by taxation as has been the case in countries in which utilities are owned and operated by govenment.

▲ ▲ ▲

The Answer to Politicians Financiers of the public utility industry were told by the Investment Bankers Association at its recent convention that the time for argument and protest against competition from the federal and municipal governments is past, that it is now up to the privately owned companies to justify themselves by providing the most efficient service.

The challenge of the government, said the brokers, is to the leadership of the utility industry itself, and that leadership which has demonstrated the highest efficiency in its extraordinary development of the business and in dealings with its operating problems cannot fail to meet the test.

The bankers have hit the nail on the head. The public utility industry in this country has a record for advancement and progressiveness that cannot be touched by any nation in the world, what with all the government control in other continents. The public may be temporarily attracted by politicians' arguments for utility service at a seemingly lower cost, which it is said government operation would bring, but first, last and all the time, the people insist on efficient service and friendly and co-operative public relations and what's more they will pay for it. This is one qualification that government finds difficult to meet.

It behooves all utility companies to make a survey of their operations and get their houses in order to maintain the same high efficient service and public relations as they have rendered in the past. This is the utilities' answer to demagogic politicians' propaganda.

Economies of Well Treated Poles

A Consideration of the Life of Treated Poles by

C. M. TILLEY
Texas Creosoting Co.

● It behooves the user of the treated pole to see that he gets proper preservative treatment of the poles he uses. He cannot do this by buying on price.

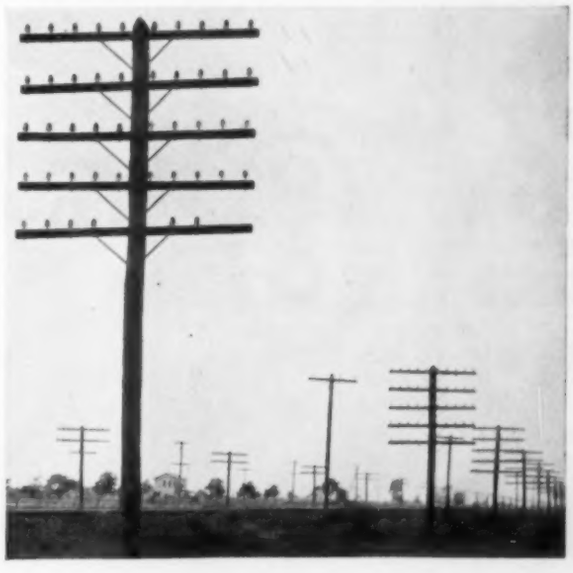
THE TREND of the times and the pressure of events in the last few years have directed attention very forcefully to economy in all angles of business. These pressures and trends have a tendency to force many economies which when thoroughly analyzed fail to show the expected saving.

I have no doubt that, in the last few years, there have been installed in the telephones lines of this country a greater proportion of untreated poles than was the case for many previous years. Under the circumstances this was probably the natural thought not the economical thing to do. The first cost of an untreated pole is a little lower and it is only human to look at the first cost of an article when buying it. However, this is not, and I think you will agree with me, the economical way to settle a question of this nature.

It is obvious that a pole costing $10.00 which will last twice as long as one costing $7.00—the $10.00 pole is more economical in the long run. In addition to the cost of two $7.00 poles, the cost of resetting the pole when it fails must be paid. I haven't the slightest idea what this cost would be but estimate it at say $5.00 more or less, varying with the location and the many factors entering into it. Assuming that this $5.00 cost is correct for the setting, you might pay as much as $15.00 for the longer lived pole and still be ahead of the game to the extent of the difference in the cost of the two cheaper poles plus the cost of one setting and the cost of the $15.00 pole, or $4.00 per pole.

This much is plain enough, but some "grizzled" telephone man over in the corner is going to rise and say something like this: "Son, how do I know that I will get twice the life out of an untreated pole. This has been a hot summer and some of the heat has gone to your head, I have an untreated pole over in the north corner of Smith's pasture that has been there for at least 25 years to my personal knowledege and you tell us that your treated pole will only last from 35 to 40."

True, this pole has probably been in the corner of Smith's pasture for 25 years, but remember that this pole was cut 25 years ago and that the timber resources of this country are not what they were when it was cut. We now use timber that we would not have looked at then. This applies equally to treated and untreated poles, however, we take the shorter lived timber in the treated pole and scientifically preserve it to give it a longer life than we could naturally



Line 17 years old, 4,480 poles, 21/100 per cent replacements to May 1933

Eleven year old creosoted pine line inspected 1934. No replacements to date and no indication of failures.

expect from the untreated pole even of the longer lived species. Also remember that we are talking of *average* life of pole lines and not the life of the individual pole. This particular pole may be the last of a lot of poles that were put in 25 years ago, some of which may have been replaced within nine or 10 years, and the average life of the poles in the line would have not been over 15 or 16 years at the most.

On the other hand we are getting to the point where we are able to definitely determine what the treated pole will do in the way of giving service over a long period of years. We have treated pole lines that have been in service as long as the average normal life of the untreated pole line with very few replacements, with a life expectancy of many years to come.

In 1928 the National Electric Light Association in their proceedings for that year published the results of a 16-year test made on the Omaha-Denver line of the American Telephone and Telegraph Company. At the time of the 1926 inspection 93.8 per cent and 95.7 per cent of the untreated poles in the test line had been removed and it was estimated —on the basis of two years additional life for the remaining poles—that one species had an average life of 11.3 years and the other had an average life of 12 years. These averages look a little low and I do not believe that they should be taken at their face value but should be raised to somewhere around 15 or 16 years.

The following year, 1927, on inspection of the Montgomery-New Orleans line of the American Telephone and Telegraph Company, built of creosoted pine, the results of which are published in the proceedings of the American Wood Preservers Association for 1932; it was found that 62.9 per cent of the poles were still in the line—13.5 per cent only having been removed for failure with 22.6 per cent removed for other causes. This inspection was made in the 28th year of the test.

It is of interest to note in the report that only 27 poles out of the 1602 in the test, had been removed from the test sections prior to 1915, nine of these being removed for decay and the balance of them for other reasons. This would indicate that only a little more than one and one-half of one per cent of the poles in this test were taken out in 15 years anl only a small part of that percentage for decay, and that the first 15 years of the life of the line was practically trouble free. This line up to 1927 has given an average life of 25.2 years in service which will, naturally, be raised at future inspections.

Neither of these service records itself is conclusive as to the life which is to be expected from either the treated or the untreated poles but both point very strongly to the conclusion that at least twice the life of the untreated can be counted on from the treated pole than it is possible to obtain from the untreated.

If we are to secure the full life of the treated pole, however, the pole must be well conditioned and carefully treated. There have been treated poles which failed a good many years before their expected life had been realized. These failures can almost always be traced to the fact that they are either poorly conditioned or improperly treated, and it behooves the user of the treated pole to see that he gets proper preservative treatment of the poles that he uses. He cannot do this by buying on price. Usually he gets just what he pays for. The cheap pole may have its treatment neglected at some vital period in the processing. Even if this is not the case and the pole is sold at a loss it can only be with the hope that at some future date the price can be increased to a point where the losses that were incurred during the low price period may be made up. On the other hand a producer who has the courage to treat and condition his poles properly must put a fair price on his product, and for that reason if no other, he is apt to be very careful of the product that he turns out. It would be economic suicide for him to do otherwise.

There is an old, old adage that, "the proof of the pudding is in the eating," which is as true today as it was the first time it was expressed. The fact that in the last 10 years there have been 13,004,565 poles full length pressure treated in the United States is rather good proof that the full length treated pole pudding has been found to be very edible and that a good many pole users have found it so.

The Farm Situation

The billion-dollar increase in farm income for the 1934 crop year is already reflected in mounting retail sales in rural areas. Sales of the two leading mail-order stores for their latest reporting periods totaled $54,294,000 as compared with $42,896,000 last year.

Federal reserve reports for September show the following gains in department store sales: Chicago district, 11%; Minneapolis, 13%; Kansas City, 19%; St. Louis, 21%. In the Minneapolis district country retail store sales in August were 22% more than last year. A leading retail chain handling ready-to-wear goods, with stores chiefly in rural and semi-urban territory, reported 20% increase in sales in September.

Farm equipment manufacturers report sales for 1934 to date (Oct. 18) 65% ahead of the corresponding period last year, and collections up 50%.—The Agricultural Outlook.

Ed. Note: This is proof that telephone companies should double-step their efforts to re-install farm telephones and to make collections from rural subscribers.

Pigeons For Telephone

Pigeons are carrying market reports on demand and supply from Jamoshalma to Baja. Owing to the exorbitant telephone rates and postal charges in Hungary, the fruit dealers decided to employ homing pigeons for their mail service, instead of the telephone.

A telephone switchboard serving as many as 10,000 lines may have more than 2,000,000 separate connections, each of which must be soldered by hand.

"The business man's two greatest auxiliaries are the telephone and the airplane," says Arthur Brisbane, noted columnist.

BASIC Telephone Electrical THEORY

● This is the first of a series of articles dealing with basic theory of electrical engineering as applied to the telephone field. This data has been used in a practical telephone training class and has proved to be valuable and popular.

By
B. C. BURDEN

Transmission Engineer
Lincoln Neb. Tel. & Tel. Co.

Part I

Alternating Current Measurements

MEASUREMENTS on alternating current circuits and equipment can be divided into three classes, viz:

1. Power frequency measurements
2. Audio frequency measurements
3. Radio frequency measurements

In addition to the difference in frequencies involved in the three classifications, the impedances of source and load are much different, hence require different types of measuring instruments and different measuring technique.

The increasing use of audio and radio frequency applications in the industrial, social, and everyday life of the world necessitates on the part of those in this work a thorough understanding of how to properly measure and interpret electrical quantities in medium and high frequency circuits and apparatus.

This part of a series of articles on basic theory discusses the general features of A. C. measurements in the three groups, and with particular reference to audio frequency measurements, inasmuch as the telephone, public addresses, and sound movie fields, as well as the audio end of radio sets, all require a knowledge of audio measurements.

In working with commercial power circuits such as are used to supply electricity for light and power purposes, we are usually concerned with only a single frequency of 60 cycles. This greatly simplifies electrical measurements as compared to the case of audio and radio frequency circuits where we are usually concerned with a band of frequencies rather than a single frequency.

Another characteristic of power circuit measurements which simplifies measurements is the fact that we are dealing usually with exceptionally low impedance sources and loads, hence when we connect an instrument across a source, we seldom need to be concerned with the effect of power taken by the instrument in giving a fictious reading.

In power circuit measurements we are concerned with the magnitude of the voltage available at the load, the voltage at the source, measurements of current taken by the load, frequency checks to determine if the source frequency is as specified by the power company, measurement of power using wattmeters, and measurement of load impedance. Measurements of wave form and transient phenomena (such as lighting, are sometimes made in laboratories, but the practical technician, or operating engineer, is seldom called on to make oscillograph measurements on power circuits.

For measurements on power circuits the soft iron vane type A. C. instruments are most popular both because of their low cost and their ruggedness. They are relatively insensitive, and are low impedance instruments, but as the power sources being measured are usually low impedance this feature is not objectionable.

It should be kept in mind that while most A. C. measuring instruments can be used on D. C. circuits, the reverse is not true and the calibration of a D. C. meter may be upset if the meter is connected to an A. C. source any length of time.

While power systems generate and distribute 60 cycle power, this is not the only frequency present in a power system.

Due to the characteristic of practically all A. C. voltage sources to generate harmonic frequencies (frequencies which are 2, 3, 4, 5, etc. times the main frequency) there is usually present in even the best systems these higher harmonic frequencies.

While they do not offer much, if any, trouble to power companies, they are very objectionable to telephone companies who may have open wire lines paralleling power lines.

It is characteristic of power systems to generate only triple harmonic frequencies, i.e., frequencies 3, 5, 7, 9, etc. times the fundamental frequency. In a 60 cycle system there is usually present 180, 300, 420, 540, etc. cycle harmonics which while having small amplitudes, nevertheless constitute a source of noise interference to telephone lines. Measurements to determine the magnitude of harmonics in power systems require special wave analyzers.

A consideration of audio frequency measuring technique can well be preceded by a discussion of the basic transmission problem in the power, and the sound projection and communication fields.

Power companies are concerned with the generation and utilization of electrical power with a minimum power loss in generating equipment and in circuits between the source and load. In order to accomplish this end generators are designed to have a very low impedance and the voltage is stepped up before being passed over a line to the load, thus keeping power loss at a minimum.

In the communication and sound projection fields the impedance of the circuits which connect source and load are inherently fixed by the spacing between line wires, size of wires, and other considerations. Likewise the nature of the source, which may be a telephone transmitter, a vacuum tube output circuit, etc., usually has relatively high impedance, and relatively low output.

The objective of those dealing with audio frequency currents is therefore

(generally speaking) **to develop maximum power in the load from a given source.** Remember, the power companies problem is to get power to the consumers' premises with a minimum power loss in source and line.

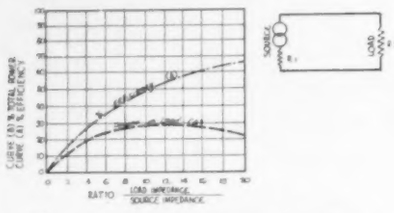


Fig. 1—Relation Between Load and Source Impedance and Power.

A fundamental electrical law tells us that **maximum power will be obtained** from a generating source **when the impedance of the load equals that of the source,** under this condition the maximum efficiency of such an arrangement cannot exceed 50%.

Fig. 1 illustrates the relation between power in the external circuit, and efficiency for various ratios of source to load impedance.

Power companies desire their load impedances to be high with respect to the generator impedance so that the internal power loss in the generator will be small. In the communication field we are not concerend so much with efficiency of conversion as we are with getting maximum possible power from our source.

From what has been said it is obvious that in communication circuits we must match the impedance of source, circuit, and load so that we can get the maximum possible power into our load from the given source.

A. C. measurements in audio frequency circuits are of four general types, viz—

1. Transmission (loss or gain) measurements.
2. Frequency Response Measurements.
3. Impedance Measurements.
4. Power Level Measurements.

In addition to the four general types we also have special types of measurements in the telephone field such as noise and crosstalk measurements.

Transmission measurements consist of measuring the input and output power at the two ends of a circuit or piece of apparatus and from the ratio of the two amounts of power determining the loss or gain in db. Inasmuch as wattmeters suitable for measuring the low powers involved in audio circuits are **not** available, it is customary to make transmission measurements either with thermo-couple type milliammeters, or with vacuum tube or rectifier type voltmeters. Voltage and current ratios can be converted to db. by the equation:

$$N_{db} = 20 \log \frac{P_o}{P_i}, \text{ or by reference to tables.}$$

In the impedance at the input and output end of the circuit or apparatus under measurement is not the same, then the following equation must be used: (note — this equation assumes equal power factors.)

$$N_{db} = \left(20 \log \frac{E_{out}}{E_{in}}\right) + \left(10 \log \frac{Z_{in}}{Z_{out}}\right)$$

Fig. 2 illustrates one method of measuring transmission loss or gain.

Transmission measurements are necessary in determining whether circuit

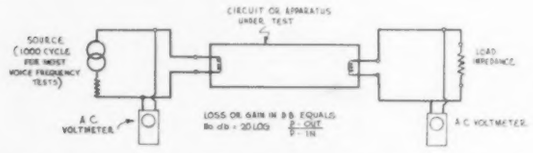


Fig. 2—Method of Measuring Loss or Gain.

elements are introducing excessive loss, to determine, in the case of amplifiers, if the gain is sufficiently high for the purpose required.

In transmitting sound over circuits and through apparatus such as amplifiers, transformers, etc., it is necessary that all frequencies from 50 to 10,000 cycles be passed with approximately equal efficiency if the highest quality is desired. If exceptionally high quality is not required, then the band of frequencies necessary to be passed need not be nearly so wide. Experience has shown that the following band of frequencies should be passed for various types of service.

Ordinary telephone service.....
.....200 to 3,000 cycles.
Radio programs..... 70 to 6,000 cycles.
Public address system.....
..... 60 to 5,000 cylces.
High quality sound movies.....
.....50 to 10,000 cycles.

In order to determine the faithfulness of any device in passing voice or music, frequency runs are made at various frequencies over the audible range. Such measurements are very similar to transmission measurements except that they are made at a number of different frequencies rather than at a single frequency. Fig. 3 illustrates the method generally used.

The maximum deviation over the desired band of frequencies should not exceed two or three db for best results.

In working with audio circuits we often need to know the impedance of some piece of equipment or circuit at a specified frequency. Impedance measurements are made in electrical laboratories by means of an impedance bridge which measures both the R and X component of the impedance under test. Impedance bridges are quite expensive and generally not available to the average technician; hence, some other method must be resorted to.

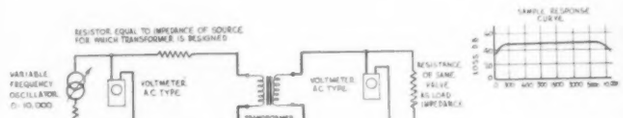
Fig. 4 illustrates a method which will give fairly approximate results in measuring impedances but which does not separate the impedance into its R and X components.

This method is based on the assumption that the voltage drop across the unknown impedance is to the voltage drop across the calibrated resistance, as the unknown impedance is to the known resistance; i.e.,

$$E_Z : E_R = R : Z \quad \text{or} \quad Z = \frac{E_Z R}{E_R}$$

As an example of how the above method works out in practice, assume that it is desired to know the impedance of an inductance coil at 1000 cycles, the coil is connected in series with a variable resistor (radio type) and a 1000 cycle source. Using a rectifier type voltmeter the voltage across the coil is found to be 10 volts and across the resistance value (5000 ohms) 5 volts.

Fig. 3—Method to Measure Frequency Response of Circuit.



The value of the unknown impedance is then:

$$Z = \frac{E_Z R}{E_R} = \frac{10 \times 5000}{5} = 10{,}000 \text{ ohms.}$$

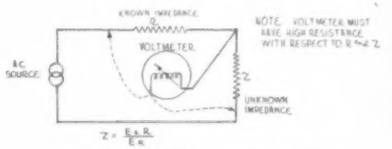


Fig. 4—Method of Measuring Impedance.

Power level measurements are necessary in the telephone and sound field to insure that the audio level at various points in a telephone circuit or a sound system does not fall below or exceed a specified level.

Such measurements are made usually with a power level indicator. There are two types, one utilizing a vacuum tube in a typical vacuum tube voltmeter circuit and the other a rectifier type voltmeter.

These instruments are calibrated to read directly in decibels, an arbitrary reference level of .006 watts being taken as zero level; i.e., zero db.

(To Be Continued)

How to Run BETTER Sales CONTESTS

● Acknowledgment is made to Harper & Brothers for permission to pre-print from the author's book, "How to Run Better Sales Contests," August 1934. Send to **Telephone Engineer** a self-addressed envelope for your copy of the "Perfect Contest Check List," a 48-notch yardstick for measuring the perfect contest.

By
M. ZENN KAUFMAN

Part V
SCORING PLAN

AS I HAVE said before, follow-up is to a sales contest what persistence is to selling. You simply must have it. Many contests that are very carefully planned and launched with great enthusiasm collapse in their second or third week because they aren't followed up properly. Follow-up in a contest is nothing less than effort on your part to sell your men the idea that they can win, that they should win, that they will win.

Let's step back a minute, however, and consider the material that opens the contest. This includes the announcement broadside and possibly a teaser of some kind. There is no rule that says you have to have a teaser for a sales contest but there is no doubt that one creates interest.

A good irritating challenge will help put over many a contest. A spontaneous challenge is a God-send, but if you can't get that then fake one. Arrange with someone to challenge someone else, and then forget the private fight and make it a "free-for-all."

The broadside that opens the contest should:

1. Pep up everyone. The broadside must enthuse. For this it depends on good showmanship and good copy. Write as enthusiastically as you can. Use friendly language and put plenty of the lingo of the theme into the story. If you are running a horse race let your copy overflow with the lingo of the race track, putting all the jockies and furlongs, clear and fast tracks into it that you can.

2. List and sell your prizes. Put a description of your prizes and the desirability of winning them right into the front of the contest, and remember whether you offer fountain pens, or travel, or anything else, you are also giving the auxiliary honor of coming in first. Make your men think of the finish right from the start. Make them commit themselves mentally to the decision to win. List your prizes and sell them.

3. Detail scoring plans and rules. Name exact dates. Make your quotas clear. Indicate who is eligible and what prizes can be won. Leave nothing to the imagination.

4. Sell. Don't be afraid to put a little first rate selling into the broadside that opens the contest. That doesn't mean that you should use all your space to moralize and preach, but a little straight selling is practical and belongs there.

Follow-Up

Follow-up must be planned to handle the various situations that naturally arise in a contest and to handle the various stages of mental condition into which the salesmen get. It also announces the current standing of the men. It can:

1. Picture the end of the contest. "Where will you be next May? Will you be in New York or will you be on the beach in Bermuda?"

2. Give practical suggestions. "You can secure the names of people put back to work by your relief agency. Make a special canvass, etc."

3. Announce first results. "Lap one of the race is over and Jimmie Johnson is in the lead."

4. Indicate that the management is watching.

5. Recommend an early start by suggesting that dark horses may come in from behind.

M. Zenn Kaufman

6. Egg the men on. "These men are on the boat. Can you put them off?"

7. Announce winners.

8. List the men who are in last place.

9. Announce a sprint.

10. Do a sales job.

11. Ask for more effort.

In addition to ordinary letters there are quite a variety of methods that can be used for follow-up. These include photographs, personal letters (one company had someone of a different sex send a hand-written love letter to every contestant). The telephone can be used for a follow-up job. Incidentaly, all letters should be signed in as familiar a manner as possible, giving a nick-name to the manager that fits in with the spirit of the contest. If you are using an envelope, put some teaser message on the outside. In a football contest

(*Please turn to page* 41)

General TOLL SWITCHING Plan

● This is the last and Part III of Mr. Osborne's article which is the last installment in the series on "Transmission Basis of Plant Design", which has been published in recent issues of **Telephone Engineer.**

By
H. S. OSBORNE

American Telephone and Telegraph Co.

THE THIRD step mentioned previously is the determination of the best distribution of repeater gains to permit the individual circuit to be operated by itself or in conjunction with other toll circuits at approximately the minimum net equivalent as determined by the several effects mentioned previously. In so far as the gain of repeaters permanently inserted at intermediate points in a toll circuit is concerned, this is a matter of economical design of the circuit and has been adequately covered in other papers. We are interested here, however, in considering the provision of gain at the intermediate switching points when two toll circuits are connected together.

As indicated previously, echo effects are usually controlling on the longer connections, whereas crosstalk, singing and noise will usually control on the shorter connections. This is due to the fact that for the great majority of toll circuits the echo effects on individual circuits increase more rapidly with length than do crosstalk and noise. Singing tendencies also increase at a rapid rate with increase in length on two-wire circuits but tend to be independent of length on four-wire cable and carried telephone circuits which are used to a large extent to provide the circuits between the primary outlets and regional centers and between the regional centers. Furthermore, when two or more toll circuits are connected together, the echo effects of the individual circuits add together, the echo effects of the individual circuits add together almost directly, whereas the effects of crosstalk, singing and noise increase at a much less rapid rate.

The result of these general considerations is that when a toll circuit is switched to another toll circuit, the overall combination can, in general, be operated at a lower net equivalent as determined by echo effects than the sum of the two circuits when operated individually in which case the minimum equivalent is determined by the crosstalk, singing and noise effects. Therefore, it is necessary in the case of connections built up by connecting together a number of toll circuits to introduce

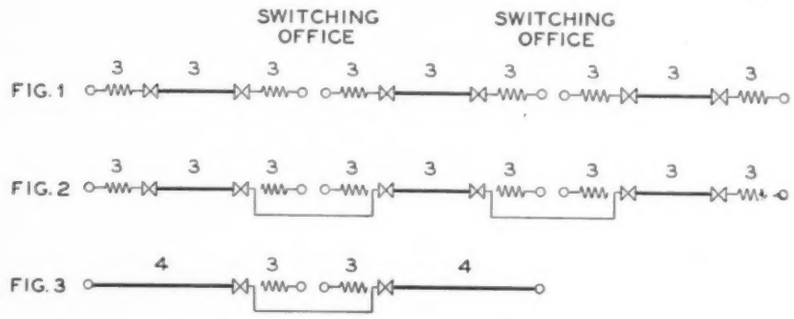


Fig. 6—Illustration of typical transmission data of terminal repeater—switching pad method of operation. Fig. 1—Circuits between switching pad offices in terminal condition. Fig. 2—Circuits of Fig. 1 interconnected at switching pad offices. Fig. 3—Connection between non-pad offices switched at pad office.

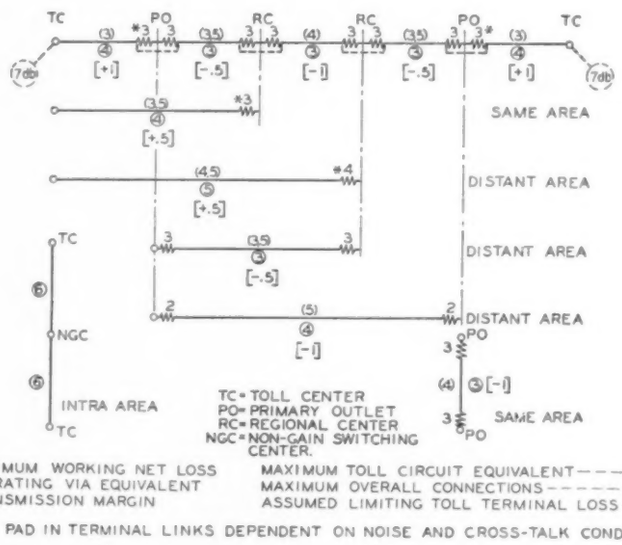


Fig. 7—Diagrammatic representation of transmission data for handling switched toll traffic under general toll switching plan.

Fig. 8—General toll switching plan—number of primary outlets and regional centers having a direct circuit group to Chicago.

repeater gain at the intermediate switching points. If gain were not introduced at intermediate points, it would be necessary in order to obtain the same overall results on connections involving more than one toll circuit to design and build a considerably more expensive type of toll circuit plant in which the crosstalk, singing and noise effects would be greatly reduced.

In the past, gain was inserted at intermediate switching points by the use of cord circuit repeaters. These familiar devices consisted of telephone repeaters inserted in the cord circuits and associated by means of double plugs with the toll circuits and with individual balancing networks designed for each toll circuit. By this means intermediate gains of from 4 to 10 db were inserted at the switching points when connection was made between two toll circuits.

The use of cord circuit repeaters has been an outstanding element in the provision of improved transmission on switched connections. It has, however, some disadvantages which have increased in importance with the increase in transmission efficiency of circuits and with the rapid development of toll business. The routine for inserting the cord circuit repeaters when needed is necessarily somewhat cumbersome, involving considerable expense for operators' labor and for increased use of the toll circuits by operators. Furthermore, under practical conditions it was found to be not possible to insure that the cord circuit repeaters would always be used when required by the routing instructions.

Recent developements in the types of toll circuit have greatly increased the numbers of toll circuits provided with repeaters at their terminals as a part of the most economical design of a circuit. When such repeaters are available, the desired switching gain can be obtained by making use of the gain available in these repeaters. The great increase in the number of terminal repeaters required for other reasons, important reductions in the cost of repeaters and the savings of operator's labor and circuit time have made it practicable to adopt a plan of providing, at certain points, terminal repeaters for every circuit, thus doing away entirely with cord circuit repeaters at these points. With the terminal repeater arrangement, the insertion of transmission gain on switched connections is done automatically by taking out of each circuit on such connections a section of artificial line. This is, of course, the equivalent of increasing the gain of the terminal repeater.

Satisfactory transmission results for all connections under the general toll switching plan involve the insertion of repeater gain on all connections switched at important switching points. This will be carried out by the terminal repeater plan just described. The artificial lines or pads which are cut out of the circuit on switched connections have losses of from 1 to 4 db, depending upon the circumstances of each case. This means that when two toll circuits are switched together, from 2 to 8 db is automatically subtracted from the connection at each switching point. The arrangement is indicated schematically in Fig. 6. The design of each circuit must, of course, be such that when either end of the circuit is connected to a subscribers' station, the repeater gain at that end will not be greater than that permissible under the terminating condition, but that when two or more of such circuits are connected together for a long built-up toll connection, the complete circuit will operate at as nearly as practicable its minimum working net equivalent. While under these conditions the permissible values of the pads associated with the terminal repeaters naturally vary in individual cases, it has been found possible to work out for general use a series of values which should give satisfactory

results. These are indicated in Fig. 7. It will be noted that these values are such that a circuit switched at both ends to other toll circuits is operated at either .5 db or 1 db less than its minimum working net equivalent, this deficit being made up by a corresponding margin at the ends of the circuit. For example, by reference to Fig. 7, it will be noted that whereas the design values of the three intermediate links of a five-link connection equate to 11 db, these links will contribute a total loss of only 9 db. On the other hand, the end links will contribute a total of 8 db, whereas their design values equate to only 6 db. The 2 db marginal deficiency in the intermediate links is compensated for by the 2 db marginal surplus in the end links. When intermediate links are used as end links in built-up connections, the switching pads at the terminating ends restore the necessary positive margins.

The design of the very long intermediate circuits, such as some of those connecting two regional centers, requires special consideration and treatment to meet the transmission requirements specified. By making use of a fundamental feature of four-wire circuits equipped with echo suppressors and by employing circuits with the highest velocities of propagation for this purpose, these circuits may be designed in practically all cases to contribute not more than the desired operating equivalent for an intermediate link. Four-wire circuits equppied with echo suppressors are unique in that at the longer circuit lengths the increase in minimum net equivalent with further increase in lengths becomes very slight.

Two general arrangements for removing the switching pads from and restoring them to the toll line circuits are available depending upon the type of switchboard facilities involved. Either arrangement requires the modification of both the toll line circuit and the switchboard circuits. One method controls the switching pad by a marginal relay in the sleeve of the toll line circuit. In the other arrangement, the pad is under the control of relays operated by battery supplied from a simplex bridge in the connecting circuits.

With the general toll switching plan the number of places in the switching gain is required is greatly limited, as pointed out above, a total of about 150 out of 2,500 toll centers. This number will be somewhat increased by secondary switching points in which it is found economical to insert switching gain in order to save the back-haul involved in following the routing provided by the plan. However, the net result is that under the toll switching plan the number of points at which switching gain is provided will be materially limited, with corresponding economies.

The full application of the general toll switching plan involves a large number of individual arrangements of plant layout, the establishment of certain new circuit groups and the rerouting of a considerable amount of switched business, the conversion of the switching offices to the terminal repeater arrangement, and the modification of the transmission requirements of certain of the circuits. The date at which these rearrangements will be completed is naturally different for different sections of the country and is determined by the regular program of plant additions and rearrangements to take care of increasing business and of needed service improvement. The existence of a comprehensive plan of this sort insures that the program of rearrangements as carried out will be along the lines of greatest economy and maximum improvement in service. The present plans of the telephone companies in the United States and Canada indicate that the plan as now established will be very closely approximated by the actual plant in the course of about five years.

Such a plan as has just been discussed is naturally not a static thing but is subject to continual modification to bring it into correspondence with changed conditions. In connection with such changes it is of interest to consider briefly the probable long time trend of the development of the plan.

One possible ultimate development would be the increasing connection of primary outlets to a single regional center so that ultimately only one regional center would be necessary. If this were to take place, the regional center would undoubtedly be Chicago. Fig. 8 is interesting as showing the extent to which the primary outlets already are connected directly with Chicago, over one half of them having such direct connection.

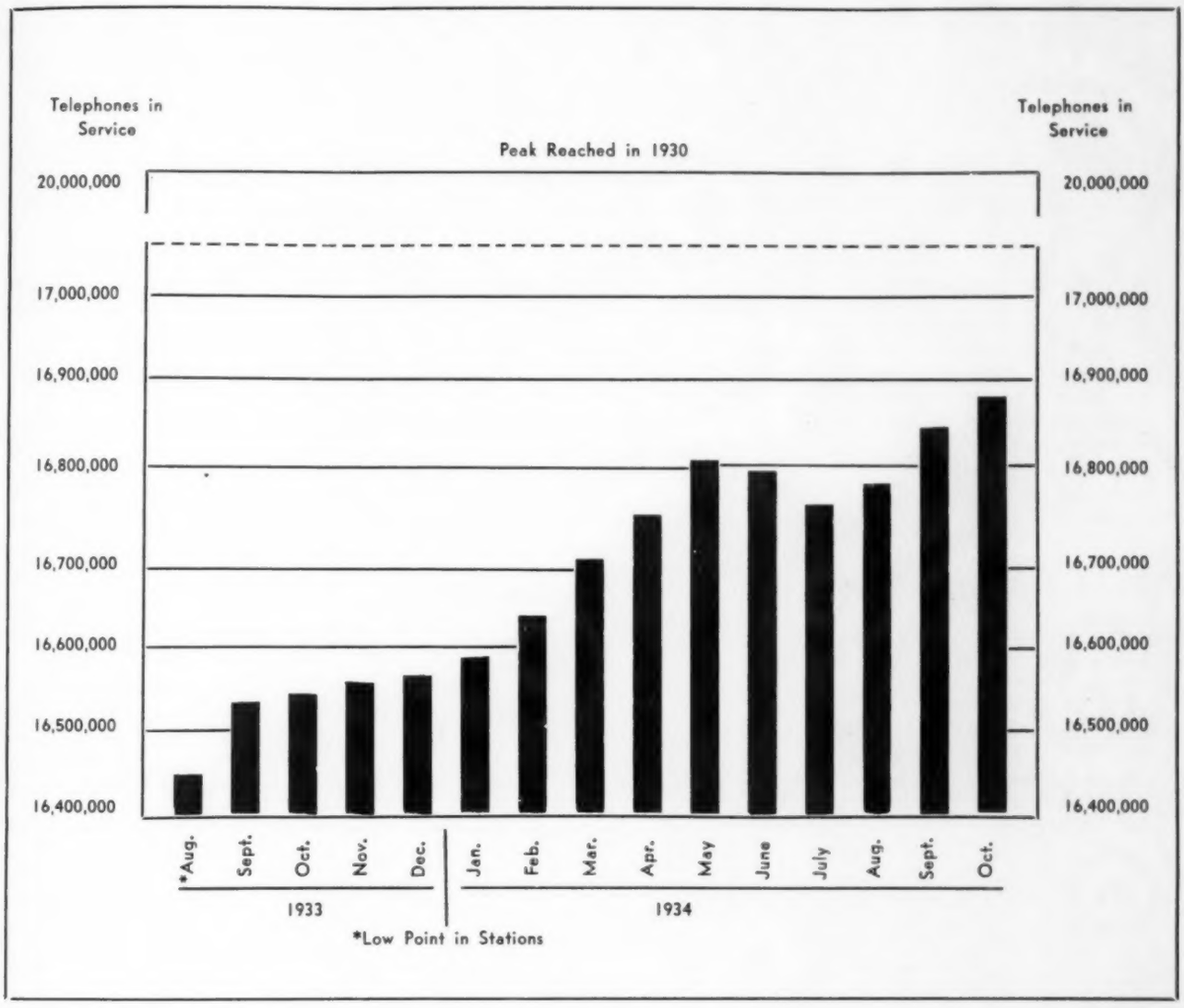
If Chicago ultimately became the only regional center, it would reduce the maximum number of switches to three. It seems evident, however, that such a plan would have many advantages. It seems clear that with such an arrangement, numerous secondary regional centers would be necessary to avoid uneconomical back-haul of large amounts of traffic, and the economies of such an arrangement do not look promising. Furthermore, it would lead to a tremendous congestion of through switching at one point, this congestion going far beyond the limits of economical concentration and leading to serious operating difficulties.

A second, and it is believed more promising general trend would result from the gradual increase in the number of regional centers as the continued development of business makes this economical. With this growth would come also a continued increase in the number of toll centers connected directly to a regional center. By this process there would be a continued growth in the number of toll centers which can be interconnected with a maximum of two intermediate switches, and it is possible that ultimately the primary outlets can drop out of the picture completely, giving a maximum of two intermediate switches for the entire country. While any such outcome is evidently many years away, it seems probable that it is along these lines the growth in development of the plan should be directed.

Although this direction of development avoids the congestion which would be brought about by the single regional center plan, even under this plan the rapidly growing amount of toll switching to be done in large metropolitan centers offers a very important problem for the future. Toll switching at these points is rapidly outgrowing the capacity of a single manual switchboard, as the switching of local calls did long ago. Equipment changes are being made which increase this capacity, but they can be but a temporary relief. Looking to the future, an increasing amount of the outgoing traffic will be handled by operators in the local central offices, reaching the toll line over toll tandem trunks. It is evident, however, that the untimate solution of the problem will involve the use of machine methods for the selection of the toll line by the operators, as is now done in certain segregated toll tandem systems.

The entire trend of recent years is thus to decrease the differences between the handling of exchange messages and of toll messages. At the present time more than 95 per cent of the toll messages are completed while the subscriber remains at the telephone, with speeds of completion only slightly slower than those of exchange messages. Transmission standards, while naturally somewhat better for the shorter distances involved in exchange messages, are, nevertheless, rapidly becoming very comparable. The present view of trends for the future is for continuation of this process, perhaps even to the use of similar types of machine equipment at central offices for switching the various classes of messages.

Monthly Telephone Station Barometer



INDEX OF RECOVERY

EVERY so often we get a glimpse of a slowly rising recovery tide. It makes little noise, and we often fail entirely to see it; but it seems to be there, slowly but surely bringing us back toward recovery.

The best indication is in the continual, slow, but healthy gain in telephone stations in the United States. This is a definite sign of real improvement. A continued gain in the number of telephones can reflect nothing else than a steady improvement in the economic condition of the great middle class. Slowly but surely, the tide seems to be rising.

LINE and DESK

Ray Blain, A. I. E. E., Editor

Q.—We are building a new pole line of 25-foot poles and would like to know how deep they should be set in the ground?

A.—The customary depth is five feet and setting them at a lesser depth is not recommended. Poles set shallow usually pull out of line soon after placed in service.

Q.—What kind of timber is recommended for poles to be used for all general purposes?

A.—The kind of timber which is more economical to use for poles will vary in different sections of the country. The following are considered good pole timber and one or more of them can generally be obtained in any locality: creosoted yellow pine, northern or eastern white cedar, western red cedar and chestnut.

Q.—Is it considered desirable to boil the reinforced portion of switchboard cords in beeswax with a view of making them wear longer?

A.—This is a disputed fact though many good telephone men consider the practice a necessity. Personally, I do not believe that boiling a good switchboard cord in beeswax will prolong its life for it tends to get still and hard to handle, also the outer braid seems to break easier than when waxed. A waxed cord is easier to rebutt in that the braid does not ravel easily. If cords are to be boiled out I would recommend a mixture of half beeswax and half paraffin as this does not make them as still and hard to handle as the straight beeswax.

Q.—What is meant by the term "grading of a pole line?"

A.—This is the change in slope of a line which results in an up or down pull at the insulators on a pole. If all poles are of equal length the wires will follow the natural contours of the country and unless the region is comparatively level will not be satisfactory. When the region is rough short poles are set on hill tops and long poles in the valleys so that the up and down pull on the wires at the insulators will be less. Further benefit can be gained and the grade improved by altering the lengths of the spans to take advantage of hills and valleys.

Q.—What is the difference between the so-called "A" and "B" type main frame protection?

A.—In the "A" type protection the inside cables to the central office equipment are normally terminated direct on the protector mountings and the cable from the outside plant are connected to terminal strips or fuse mounting lugs. With the "B" type protection this arrangement is reversed as the cables to the central office equipment are connected to terminal strips and the outside plant cable pairs are terminated directly to the protector mountings.

Q.—Is it considered desirable to indicate the telephone number working on each cable pair, in each cable terminal?

A.—Some manufacturers of cable terminals provide a place inside the lid where the cut-out of the terminal can be indicated and the telephone number, working on each pair may be indicated with a soft lead pencil. While there is no doubt that such an arrangement is helpful providing that it is kept up to date at all times, trouble-shooters don't usually take time to change the pencil record when they change the pair for any reason. Records of any kind not properly maintained are worse than useless for one cannot depend on them or know when to trust them.

Q.—What is a repeating coil and what is its principal uses in telephone circuits?

A.—The repeating coil may be briefly described as a very efficient four winding transformer with a one to one ratio. These coils are designed on the same principle but their characteristics differ slightly according to how they are to be used. Coils for use in phantom or simplex circuits differ slightly from those for use in cord circuits. Coils used in phantom circuits must be efficient transformers of ringing frequencies as well as voice frequencies and are known as "Ring-Thru" coils. In a cord circuit it is not necessary that a repeating coil pass ringing current so they are designed with less iron in the core than one for use on a phantom circuit and are known as "Non-ring-thru" coils. Repeating coils are used on simplex and phantom circuits, cord circuits, operators telephone circuits on switchboards and in trunk circuits. They are also sometimes used to connect a metallic to a grounded line. The repeating coil is generally used to prevent two sources of direct current from bucking each other. Some troublemen due to the misnomer "Repeating Coil" connect them in a circuit with the idea that they will boost transmission when actually most modern repeating coils represent a loss of about .5 db. Many times a transmission gain is derived from the connection of a repeating coil in a circuit due to a proper control of direct current and the passing of voice frequencies and they should not generally be used for any other purpose.

Q.—What is meant by selective ringing?

A.—This is a term allied to party line service and can be accomplished in several different ways the most common of which is ringing to ground. With this system the bell on one station is connected from the tip side of the line to ground and on the other from the ring side of the line to ground. The operator then rings out on either side of the line with a properly designated key and signals either party without disturbing the other. Selective ringing may also be accomplished with pulsating current by properly biasing the ringer, though this method is seldom used at the present time. Four party selective ringing is sometimes used which is accomplished by installing a suitable relay in each subscriber's set which operates and connects the bell to the line for ringing. Harmonic ringing on a four party line is commonly used and consists of connecting all subsets in the normal way, but each has a clapper of different weight. The weight of each clapper is such that the frequency of the pendulum is the same as one of the frequencies of alternating current generated and the selection of the proper frequency is made by the operator with a key arrangement. All ringers receive current each time the line is rung but only that ringer tuned to the frequency being used is rung. Ringing machines with this system must be kept closely adjusted and maintenance is generally high.

ASSOCIATION Reports on ACCOUNTING

● Sends suggestions for changes in uniform system of accounts for telephone companies to Federal Communications Commission per orders Nos. 7 and 7-A.

SUGGESTIONS for changes in the uniform system of accounts for telephone companies in accordance with Federal Communications Commission orders Nos. 7 and 7-A were sent to the FCC on October 29 by the United States Independent Telephone Association.

On October 22 the National Association held a conference of representatives of Class A telephone companies in Chicago to obtain their views relative to the policy and procedure to be taken regarding depreciation at the hearing before the FCC on November 16, as scheduled in FCC order No. 7-A.

The suggestions made by the Association were in a form of a letter signed by F. B. MacKinnon, president and Alfred L. Geiger, general attorney. The letter follows:

"Under Orders Nos. 7 and 7-A of your honorable body opportunity is given all parties in interest to file objections to the report of the Interstate Commerce Commission in Docket No. 25705, and to suggest amendments to the Uniform System of Accounts made effective January 1, 1933, by the Interstate Commerce Commission. In accordance with these orders the United States Independent Telephone Association, in behalf of its member companies, hereby submits to you the following comments upon and suggestions relative to the said report of the Interstate Commerce Commission in Docket No. 25705, and suggests that amendments be made to said Uniform System of Accounts for Telephone Companies to harmonize the same with the Communications Act of 1934.

"It is the position of this Association:

"FIRST: The Act to Regulate Interstate Commerce, as amended, was interpreted and administered by the Interstate Commerce Commission as being applicable to all telephone property devoted to telephone service, both intrastate and interstate, upon the theory that intrastate service was so interwoven with interstate toll service as to directly affect the toll service. The Commmunications Act of 1934 is based upon a different theory and is clearly applicable solely to the interstate toll properties of certain telephone companies.

"SECOND: (a) That said Uniform System of Accounts for Telephone Companies and changes and revisions therein do not apply to telephone companies defined in the Communications Act (Section 3-U) as Connecting Carriers.

"(b) That as to telephone companies other than Connecting Carriers, said Uniform System of Accounts and changes and revisions therein apply to and are obligatory upon such companies only with respect to that part of their toll business which is interstate.

"THIRD: Relative to the changes in said Uniform System of Accounts, proposed by certain State Commissions in Interstate Commerce Commission Docket No. 25705, we submit that any modifications in the System of Accounts as advocated by the State Commissions and discussed by the Interstate Commerce Commission in its report on No. 25705, should be considered in the light of existing economic conditions and the changes in the law.

"The Interstate Commerce Commission had before it 118 changes in the System of Accounts proposed by certain State Commissions. Of these the Interstate Commerce Commission rejected 104 and approved the remaining 14 with slight modification in some instances. In many of the 104 changes rejected, the question of State jurisdiction was involved rather than abstract accounting principles. The Interstate Commerce Commission stated it cannot assign any of its powers or responsibilities to any other body. In its report, the Interstate Commerce Commission has set forth clearly its reasons for the rejection of these and other changes, as well as its reasons for recommending the adoption of the 14 changes accepted.

"The Association's Accounting Committee in reporting on these 14 approved changes says:

"'On the whole we do not believe that the proposed revisions would add anything to the value of the system of accounts as now prescribed, but speaking strictly from the standpoint of correct accounting principles, we believe that the recommendations are not contrary to such principles. We further believe that it would be possible to conform to these changes, if made, as the suggested changes, in the main, involve only additional accounting details. As indicated, these proposed changes are not contrary to correct accounting principles, but measured in terms of the value of the information which would be obtained, we believe that the additional expense involved in complying with the proposal would not be justified.'

"As to Item R-23, where it is proposed that the company shall 'cite by name and page of book or other record the original entry of cost of the thing retired,' the Committee says:

"'This would involve references to old books and records which would normally be filed in storage vaults and such records, being voluminous and great in number, an unreasonable amount of time and expense would be required in tracing costs of items retired. This expense and time might be justified if it had the effect of improving the accounting for retirements, but it is unnecessary since retirement unit records generally are maintained on an average basis for small items of property such as poles, crossarms, etc., and costs on large items are, in the most instances, readily available.'

"As to the effective date of changes ordered in the System of Accounts, the Accounting Committee says:

"'In addition to the fourteen specific recommendations regarding accounting rules, the 'conclusion' of the Commission, which are a part of the Report, include recommendations to the effect that the revisions recommended by them should be made effective as of January 1, 1933, and January 1, 1934, for Class A and Class B telephone companies respectively, and that all Class A and Class B telephone companies that elected to adopt the uniform system of accounts as of January 1, 1933, should be required to restate their accounts for the years 1933 and 1934 in accordance therewith. We are of the opinion that if any of the fourteen changes recommended by the Interstate Commerce Commission are adopted, the effective date of the changes should be the first of the year following the date of adoption.'

"This Association at hearings of the Interstate Commerce Commission and before Committees of Congress has consistently presented the necessity of uniformity in the accounting practices of telephone companies. Its members are located in various States and only through a general uniform system of

accounts has it been possible to assemble necessary comparative data and present to financiers a standard form of statement based on uniform practices in the distribution of revenues and expenses.

"The Association urges, therefore, that the Communications Commission while considering changes in the Uniform System of Accounts and the recommendations of the State Commissions, as provided in Section 220, shall have in mind this importance of uniformity of accounting practice to the regulatory bodies, the public and the telephone companies.

"FOURTH: This Association recommends that instruction 80, entitled 'Computation and Filing of Depreciation Rates,' and Instruction 81, entitled 'Depreciation Charges,' of said Uniform System of Accounts be so amended that said Instructions and all parts thereof will cover only matters concerning accounting for depreciation and will in no wise deal with or bear upon or provide for the fixing of the amount of depreciation or percentage of depreciation rates.

"We submit that the rules of accounting for depreciation and the fixing of rates of depreciation are two entirely separate and distinct matters and are dealt with separately by the Communications Act; that the Uniform System of Accounts should confine itself to the matter of proper accounting for depreciation when the rate has been determined; that the matter of fixing the depreciation rate has no part in a system of accounts and that the Uniform System of Accounts should be amended accordingly.

"FIFTH: This Association submits that it is not at this time practicable for various reasons for the Federal Communications Commission to prescribe, in accordance with and in the manner authorized by law, depreciation rates for interstate toll property that properly may be included in operating expenses of telephone companies, and this Association recommends that the Commission refrain (as it has by law the power to do) from fixing such depreciation rates at this time, and that before undertaking to fix such rates at any time the Commission reopen the entire case for reconsideration on the bases of changes in the law and in jurisdiction and the effect of the establishment of fixed depreciation rates on the telephone companies under present economic conditions; and to this end the Commission should set aside or appropriately modify Order No. 14700 of the Interstate Commerce Commission and amendments thereto, and disregard all filings made thereunder.

"We maintain that the investigation made by the Interstate Commerce Commission of this matter of depreciation was made under entirely different economic and other conditions and under a law the administration of which did not require differentiation between interstate and intrastate property. Proper determination by the Federal Communications Commission of depreciation rates in the manner provided for under the present law will require a comprehensive and careful study by that Commission to separate from all the property owned by a company that property which is devoted to interstate toll service, and after such separation has been made, there also will be required a careful study by the Federal Communications Commission of the interstate toll property of each subject company to determine the rates for depreciation to be properly applied to said property. We respectfully submit that, until this study is made by the Federal Communications Commission and all the facts determined concerning the interstate and intrastate status of each company's property and also the facts concerning depreciation properly applicable to said interstate toll property of each company, it is impracticable for the Commission to fix rates of depreciation for such property according to the present law.

"We also maintain that filings made with the Federal Communications Commission under Order No. 14700 of the Interstate Commerce Commission are not applicable under the present law since the companies' estimates of composite rates contained in those filings do not differentiate between interstate and intrastate property.

"It should be noted in this connection that the State Commissions in asking for longer time in which to complete their own studies of depreciation rates to be recommended to your Commission have pointed out the difficulties of ascertaining proper depreciation rates and the fact that considerable time is required in which to make the necessary studies.

"The establishment of a fixed depreciation rate for telephone properties under present economic conditions is impractical because during the last four years these companies have suffered for the first time in the history of the telephone industry a severe loss of telephones in service and a consequent heavy decrease of gross revenue. While there has been some slight recovery of these telephone losses, it is impossible at this time for any telephone company to determine whether it will ever regain all of its lost business and consequently whether it will ever be able to use again in the business the excess facilities it now has in its plant. This excess is considerably higher than excess facilities normally maintained for future use. It is entirely possible that a considerable portion of this abnormal and unusual amount of excess plant will in some cases have to be charged off through depreciation; and for this, as well as other reasons, it is impossible for any telephone company to determine now what rate of depreciation it should have for the future. If a rate be fixed now under which the company can survive with its depleted revenues that rate will probably be entirely too low for the future. If a rate be fixed now based on experience prior to the depression, that rate will probably cause grave financial embarrassment to the majority of companies concerned.

"The study of depreciation rates for telephone companies was undertaken by the Interstate Commerce Commission at a time when the telephone industry was experiencing continued growth of business and property. At that time it might have been possible without severe harm to the companies concerned to have established a fixed rate applicable until the loss of telephones and revenues began. It is in our opinion impossible now to fix a rate for the future properly applicable because of existing uncertainties; and under present and prospective conditions of the industry a fixed rate of depreciation will be harmful to the industry and the public it serves.

"We submit, therefore, that because of the foregoing and other reasons the matter of fixed depreciation rates on telephone companies should be postponed at least two years and should not then be undertaken until the subject has been reopened and reconsidered in the light of economic conditions then existing and in conformity with the law with respect to regulation then in force.

"We favor a reasonable and constructive settlement of all these questions on lines which will promote the best interest of the public served and of the companies concerned, and to that end this Association and its members stand ready to co-operate with you and to assist you in every way practically possible in such administration of the law. This Association and its members co-operated wholeheartedly with the Interstate Commerce Commission during the years that body administered Federal regulation of telephone companies, and it is our desire to likewise co-operate with the Federal Communications Commission to the end that this Commission will have all assistance that can be given it by the telephone industry to aid it in proper and constructive administration of the Communications Act. It is with the knowledge that your honorable body is anxious to administer the Communications Act constructively and fully in accordance with its intent and purpose, and with justice to all, that we make the suggestions and recommendations herein."

★

Will they hear her in December as they did in May?

● "Fadeaway transmission" is primary cause of subscriber complaints—how a "battery that breathes" solves the problem.

IT is vital to good service that your subscribers hear your operator clearly, distinctly, at all times. The loudness of her voice depends in great measure on the voltage of her transmitter battery. As battery voltage falls, volume at the subscriber's receiver fades away at an even greater rate.

It is vital to good service, therefore, that your operator's transmitter battery maintains its voltage at practically full initial strength throughout its life. The Eveready Air Cell Operators Transmitter Battery does just that—and is the only primary battery that does. It does it by "breathing" into itself the essential, voltage-sustaining, depolarizing oxygen directly from the air through unique carbon "lungs". The depolarizer never runs out—never becomes exhausted. Hence the voltage stays up and your subscribers hear your operator as well in the latter stages of the battery's life as they did when it was first installed.

The Eveready Air Cell Battery has LONG LIFE, too—longer than you have been accustomed to getting from primary batteries. Capacity, 600 ampere-hours. On transmitters drawing 100 milliamperes, this means 6000 TALKING HOURS—everyone of the 6000 at peak transmission!

It's COMPACT, CLEAN, NEAT, EASILY ACTIVATED FOR SERVICE. Its rectangular shape facilitates storing; it does away with messy chemicals, washing dirty jars, assembling "renewal" elements; it's shipped dry and is activated for service by merely filling with ordinary drinking water.

NATIONAL CARBON COMPANY, INC.

General Offices: New York, N.Y. Branches: Chicago, San Francisco

Unit of Union Carbide UCC and Carbon Corporation

This helpful, instructive booklet is FREE, send for it

"TRANSMISSION IMPROVEMENT IN THE LOCAL BATTERY EXCHANGE"

by B. C. BURDEN

Well-known writer on exchange operation problems

NATIONAL CARBON CO., INC.
30 East 42nd Street, New York, N. Y.
Room 1328, Dept. TE11

Please send me a Free copy of "Transmission Improvement in the Local Battery Exchange."

Name_____

Address_____

W. Roy McCanne, Stromberg President, Dies

W. ROY McCANNE, 55, president and general manager of the Stromberg-Carlson Telephone Manufacturing Co., Rochester, N. Y., died unexpectedly in his home at 10 p. m., Monday, November 5.

On Saturday he enjoyed a round of golf with a group of friends. Sunday night he suffered a cerebral hemmorrhage attack but appeared better Monday morning and planned to go to his office. It was only after considerable persuasion that he was induced to remain at home.

For 37 years Mr. McCanne had been one of the most outstanding and respected figures in the telephone industry. Few man have contributed more to the development of our industry than Mr. McCanne contributed. His genial and kindly personality and his sincere, keen and outstanding business ability gained for him countless friends and made him one of the most beloved and admired men in the industrial world.

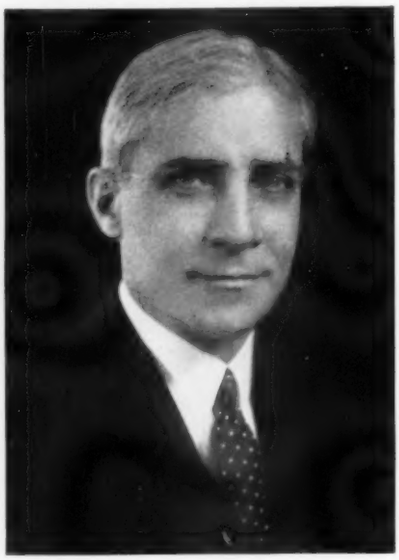
In building the Stromberg-Carlson Co. to its present high station, which stands as an enduring memorial to his great accomplishments, Mr. McCanne always respected the opinions and judgments of members of his company, both young and old, and this genuine trait inspired them to expand their energies to attain greater performance and efficiency. Those of us who have worked under Mr. McCanne's superb leadership always considered him as our greatest friend and counselor.

Mr. McCanne was born in Jacksonville, Mo., Dec. 29, 1878 and early in life developed a keen interest in things electrical. Without the advantage of a college education he began his career upon obtaining employment in the office of Charles H. Ledlie, a civil and electrical engineer in St. Louis in 1897.

While working there he assisted in the contsruction of the Kinloch Telephone Co.'s exchanges in St. Louis and suburbs as well as its toll lines covering Missouri and Illinois.

In 1906, the group of St. Louis financiers for whom the Kinloch properties had been built became interested in the United States Independent Telephone Co. which controlled the Rochester Telephone Co. and the Stromberg-Carlson Telephone Manufacturing Co. and Mr. McCanne was sent to Rochester to represent their interests.

He was made secretary of the Stromberg-Carlson Co. in 1907. Except for a short period with the Eastman Kodak Co., his interest was always centered in the development of the telephone and radio.



W. Roy McCanne

In 1914 he was named treasurer and general manager of the Stromberg-Carlson Co. and was elevated to the presidency in 1924, succeeding George W. Todd who became chairman of the Board. Mr. McCanne continued as general manager and president until the time of his death.

Mr. McCanne served as director and member of the executive committee of the United States Independent Telephone Association for several years. He resigned these positions this year, George A. Scoville, vice-president of Stromberge-Carlson, succeeding him. Mr. McCanne was one of the charter members of the Independent Pioneers Telephone Association. Among his telephone activities were those as a director of the Rochester Telephone Corp.

It was as a result of his foresight that the company in 1925 expanded its field to take in the production of radio sets, and the Stromberg-Carlson Co. is now recognized as one of the leading manufacturers of high grade radio sets and equipment. Always a lover of good music, and confident that other music lovers would welcome a radio instrument that overcame the limitations of existing receivers, it was under Mr. McCanne's supervision that the recently announced Stromberg-Carlson high fidelity receivers were developed.

He recently came into the national spotlight when the Radio Manufacturers' Association named him, with Fred D. Williams of Indianapolis, to confer with officials in charge of President Roosevelt's industrial control program relative to the radio industry.

His message to Washington relative to the industry control bill was read in the Senate last year by Senator Borah in defending his anti-trust amendment to the measure.

During the World War he was one of three members on Rochester's Community Labor Board and in addition was chairman of the signalling apparatus committee appointed by the War Industries Board and was a division chairman of committeemen on all of Rochester's Liberty Loan drives.

Always active in the Rochester Chamber of Commerce, Mr. McCanne was named president of that organization in 1921. He was also a director of the Rochester Gas & Electric Corp. and of the Rochester Trust & Safe Deposit Co.

He is survived by his wife, Minnie Lee McCanne; a son, Lee McCanne and two grandchildren, Roy and Sallie McCanne of Rochester; his mother, Mrs. Alice McCanne of Cairo, Mo., and a brother, Oval McCanne of St. Louis.

Would Purchase Southern Indiana Company

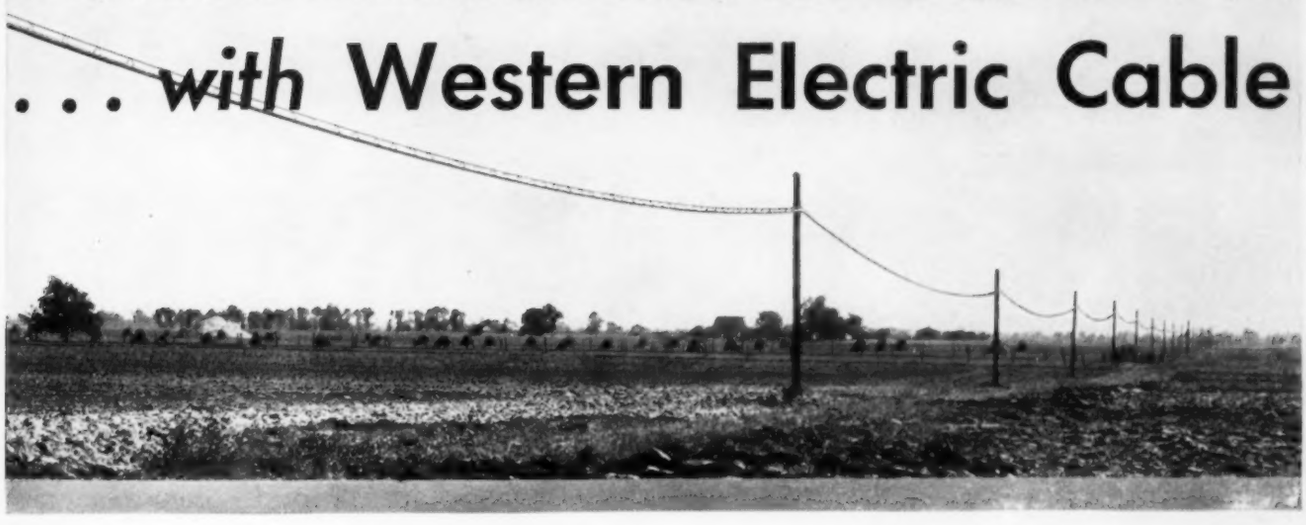
The Indiana Telephone Co. has filed a petition with the Indiana Public Service Commission for authority to purchase the Southern Indiana Telephone and Telegraph Co., which company is at present being operated by George M. Barnard, trustee in bankruptcy. The Indiana Telephone Co. also asks permission in the petition to issue $550,000 in first mortgage bonds and 5,500 shares of common stock with a par value of $100.

The home office of the Southern Indiana Telephone and Telegraph Co. is at Seymour and exchanges are located in Mt. Vernon, Brownstown, Crothersville, Medora, Vallonia, Bicknell, Mitchell, Shoals, Orleans, Paoli, Scottsburg, Campbellsburg, Martinsburg, Salem, Worthington, Loogootee, Fredericksburg, Madison, Hanover, New Washington, Birdseye, Dubois, Ferdinand, Haysville, Huntingburg, Ireland, Jasper, Schnellville, St. Anthony, English Henryville, Vevay and Austin.

The company was placed in receivership in December 1932 and was placed in bankruptcy in August 1934. The directors of the Indiana Company, which proposes to purchase are William J. Walsh, Edwin J. Small and Claude P. Baker, of Chicago; James P. Goodrich, and P. E. Goodrich, of Winchester; P. F. Goodrich, of Indianapolis; E. L. Cline, of LaPorte, and J. Dwight Peterson, of Indianapolis.

Crossing the Great Plains

. . . with Western Electric Cable



Stretching across the great farm lands and plains of the West . . . climbing over mountains . . . winding beneath city streets . . . you'll find Western Electric telephone cable serving faithfully.

Year in, year out, this cable assures satisfactory performance. It is designed by thoroughly qualified telephone engineers. Its scientifically correct structure is maintained by constant research. Every detail of raw material selection is carefully checked by cable specialists.

Western Electric has had long experience in making cable for the Bell System. Among the many standard types available are: paired and quadded paper insulated lead covered; jute protected; steel tape armored; submarine; textile insulated. Or your own specifications will be followed in producing special cable to meet your needs.

For full information, write Graybar Electric, Graybar Building, New York—or telephone Graybar's nearest branch.

Voice amplification will be needed at many large gatherings during the pre-election, Thanksgiving and Christmas seasons. Meet this need—and increase your revenues and public good will—by furnishing Public Address equipment on a rental basis.

Western Electric

LEAD COVERED CABLE AND TELEPHONE APPARATUS

Distributed by GRAYBAR *Electric Co., Offices in 74 Principal Cities*

Peninsular Co. Celebrates 33rd Anniversary

Picture on Front Cover

Carl D. Brorein

THE Peninsular Telephone Co., Tampa, Fla., is celebrating the completion of a "third of a century" of service to that section of Florida. Incorporated on March 25, 1901, the company has grown from an initial capital of $225,000 to a point where its assets are more than $13,000,000. From 85 old fashioned "crank 'em up" telephones, it has grown to more than 40,000 modern telephone instruments.

Interwoven with the story of the company is the story of W. G. Brorein, its founder, president for thirty-three and a third years. At 72, Mr. Brorein is still active in many of the civic and charitable enterprises that have made him one of Florida's outstanding citizens. Aside from his business, he is probably best known as president, since its organization as the old South Florida Fair, of the now Florida Fair and Gasparilla Association.

In January, 1901, Mr. Brorein, then a member of the Ohio Senate, was in Columbus on business. At that time he was considering entering the telephone business in Texas, but a friend called his attention to a location which he considered very favorable for telephone development. He referred to Tampa, which, in common with most of this area, had inefficient and unsatisfactory service. Many towns here had no service at all.

Mr. Brorein was so convinced of the future possibilities of Tampa and the central west coast section of the state that he made application for franchise in Tampa, which was granted. Following this, franchises were granted in other surrounding towns. Application for a charter was granted by the state and the company was incorporated on March 25, 1901, with a capital stock of $225,000.

Mr. Brorein, who was elected president and general manager of the new company, gives an interesting sidelight on the origin of the company's name and the familiar dark blue trade-mark. The name "Peninsula" was inspired by a beautiful painting seen by him in Jacksonville, on his way down to Tampa, and the outline of the peninsula of Florida was adopted as an emblem and trademark.

When the franchise was granted in Tampa there were approximately 300 Bell telephones serving a population of around 17,000. There were small exchanges operating in Bradenton and Palmetto. Mr. Brorein and his associates purchased these exchanges and thus the actual operation of the Peninsular company was inaugurated with this purchase. There were no more than 100 subscribers in the two exchanges, but their chief value was their location in a very promising territory.

It was rather difficult for Mr. Brorein to interest capital in his business located as it was in an isolated territory, but work was carried on as fast as possible with the money available. J. F. Vaughn was put in charge of reconstruction work on the Manatee exchanges and early in the fall of 1901, construction was started on a toll line to Plant City, Lakeland and Bartow. The first exchange built by the company was in Lakeland, which opened in 1902. Shortly afterwards, exchanges were built and opened in Plant City and Bartow. In October, 1902, the Tampa installation was completed and about 500 subscribed for service. An exchange at Sarasota was built in 1904.

About 1906, the Peninsular company which had organized the West Coast Telephone Co. to operate exchanges in St. Petersburg, Clearwater and Tarpon Springs, sold its controlling interest for $3800. Those properties were later divided and in 1910 the Peninsular company bought back the Clearwater and Tarpon Springs exchanges.

In 1907 the Mulberry exchange was constructed, and in 1917, Winter Haven and Auburndale were purchased. Lake Wales, Frostproof and Haines City were acquired by the Peninsular company in 1921. In 1926 the New Port Richey exchange was built, and the Venice exchange was constructed in 1928.

In Tampa, both the Peninsular company and the Bell company had been operating at a heavy loss. The Peninsular company finally purchased the other properties in 1906—the first instance of an independent company buying out the Bell. In 1915, the Tampa exchange was cut over to automatic "dial" service—the first city of its size in the country to have wholly automatic service. This equipment was housed in a new four-story building, to which was added in 1927 a modern 12-story office building which houses the general offices of the company at present. The Peninsular company repurchased the St. Petersburg exchange in 1923, for $400,000. A new building was constructed and automatic equipment was installed in St. Petersburg in 1924.

The Peninsular Telephone Co. has grown and expanded during the past three decades to keep pace with the rapid development of the territory which it serves. Mr. Brorein has remained as president all this time and has had the pleasure of seeing the company which he founded holding the position of the largest independently owned telephone company in the South and one of the three or four largest 6800 or more independent telephone companies in the United States. Carl Brorein is general manager of the company.

TELEPHONE ENGINEER salutes Mr. Brorein and the Peninsular Telephone Co. on its 33rd anniversary and congratulates them for their progressiveness in giving their public efficient telephone service for 33 consecutive years.

Instructs Members on R. F. C. Loans

In the North Dakota Telephone Association Bulletin, A. T. Nicklawsky, secretary, has the following to say relative to telephone operating companies securing R. F. C. loans:

"In order to have some definite information if the Reconstruction Finance Corporation would grant loans to telephone companies, we wrote to the Federal Reserve Bank at Minneapolis, Minnesota, (through which the R. F. C. in this territory operates). In reply, while the bank did not say definitely that loans would be granted, it did suggest that the telephone company apply direct to the bank and the necessary application blanks and information as how to prepare the application would be furnished.

"If you are interested in this proposition, I would suggest that you deal direct with the Federal Reserve Bank, Minneapolis, Minnesota."

LEICH SWITCHBOARDS

Leich C. B. Multiple Switchboard. Welded Unit Steel Frame Construction, Bakelite Covered Tables and Panels.

LEICH switchboards are modern in appearance and equipment.

New materials and careful engineering are responsible for the high efficiency characteristic of LEICH switchboard apparatus.

Long life of all parts subject to wear is assured by the correct choice of materials.

LEICH switchboards are favorably known for the accessible mounting of all equipment.

Investigate LEICH switchboards before buying.

LEICH ELECTRIC CO. - Genoa, Ill.

Reliable

"RU" Cable Terminal

An Outstanding Contribution to the Telephone Industry

The "RU" is radical in design, yet simple in every respect and thoroughly fitted to the job.

Write for a sample

Reliable Electric Company

3145 Carroll Ave. Chicago, Ill.

Unaffected **BY SUDDEN TEMPERATURE CHANGES**

● This improved, tougher Hemingray Glass—with its proven ability to withstand severe, sudden temperature changes—means better insulator service, lower costs. With the advantages of high dielectric strength ... heavier side walls ... thicker petticoats ... always clear ... smooth threads ... tougher glass ... impervious to moisture ... Hemingray pin-type Insulators offer greater economy in telephone insulator service. Write for samples and descriptive bulletin. Owens-Illinois Glass Company ... Hemingray Division, Muncie, Ind.

OWENS-ILLINOIS
HEMINGRAY
PIN TYPE GLASS
INSULATORS

Some Good Low Cost Telephone Advertising

TELEPHONE managers with limited advertising budgets are somewhat like magicians pulling rabbits, ribbons and flags from top hats. In other words, they must "get the most out of it" and keep the attention of their audience while doing so.

Continuous advertising is more beneficial to the telephone company than occasional large spreads or "spot" space. Nature of the service lends itself to a steady, persistent sales argument. Your average telephone manager should spend all of his budget on SALES. Lost customers and heavy competition for the buyer's dollar emphasize this as the dominant message for current telephone advertising. Institutional copy always has its place, but what all of us need now is **more telephones in service!**

Your advertising analyst is faced with these facts: (a) the budget is small; (b) continuous advertising is advisable; (c) it must be SELLING advertising.

A small budget and continuous insertion limit the space used in ads to a very few inches. They must be planned to catch the eye and hold interest in small space. They should have a distinctive style to tie the campaign together. There are five dominant reasons why folks order telephones: (a) protection, (b) savings of time and money, (c) convenience, (d) privacy, and (e) employment. Advertising must stress these five appeals if it expects to benefit sales.

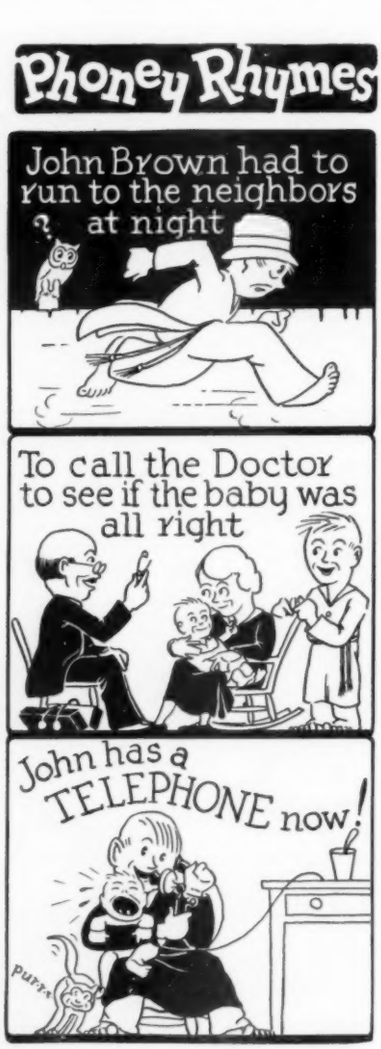
The requirements of such a telephone advertising campaign are met by PHONEY RHYMES, a new series of ads just released to operating companies through the United Trust Co., Abilene, Kans. Each ad occupies less than one column by six inches of space in the newspaper. Reproductions of three of the ads are presented below. The name of the telephone company goes below the cuts.

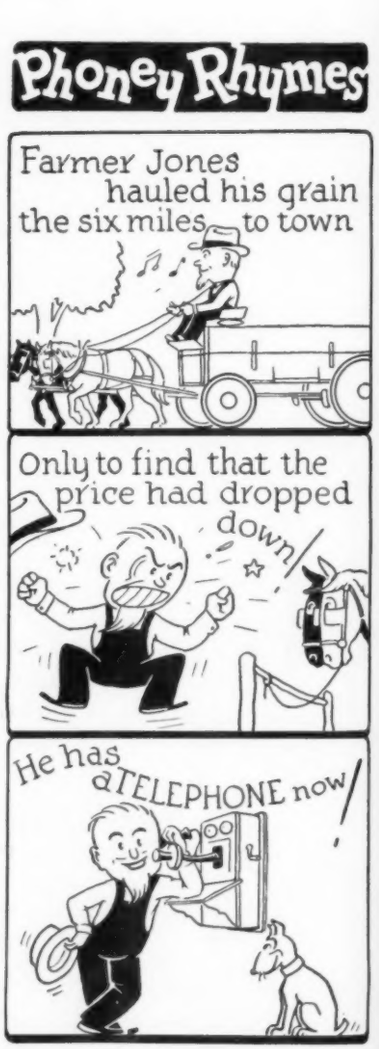
Each ad shows how some individual decided he needed a telephone. Each incident is one that might happen to anyone at any time. There are 12 ads in the series and all of them are based on the five dominant reasons why folks order telephones.

This series of advertisements may be obtained for $4.55 for a set of mats or $9.65 for a set of stereotypes. Telephone managers should consult their newspaper editors to decide which to order.

An encouraging number of telephone companies use advertising to bolster sales. They find that regular use of the newspapers coupled with employee interviews for non-users will bring in the business.

Phoney Rhymes
Mrs. Smith worked and slaved but never got through
It slowed up her housework with errands to do/
She has a TELEPHONE now!


Phoney Rhymes
John Brown had to run to the neighbors at night
To call the Doctor to see if the baby was all right
John has a TELEPHONE now!


Phoney Rhymes
Farmer Jones hauled his grain the six miles to town
Only to find that the price had dropped down/
He has a TELEPHONE now!

B. L. Kilgour Is Elected Pioneers' President

The 13th annual meeting of the General Assembly of the Telephone Pioneers was held in New York, October 19 and 20.

At this meeting, B. L. Kilgour, president of the Cincinnati and Suburban Bell Telephone Co., was elected president for the coming year to succeed W. B. T. Belt, and F. M. Stephens, vice-president and general manager, Southwestern Area of the Ohio Bell Telephone Co., was elected senior vice-president. The vice-presidents elected were: P. A. McFarlane, vice-president, Bell Telephone Co. of Canada; A. H. Mellinger, vice-president, Illinois Bell Telephone Co.; Charles E. Ames, division plant supervisor, New England Telephone and Telegraph Co.; G. J. Brett, general auditor of the Michigan Bell Telephone Co.; Miss Ethel V. Burke, supervisor, central division disability bureau, traffic department, New Jersey Bell Telephone Co.

The members of the Executive Committee elected to serve during 1935 and 1936 are: E. F. Carter, vice-president, American Telephone and Telegraph Co.; J. A. Remon, general manager of the Chesapeake and Potomac Telephone Co., and C. G. Stoll, vice-president, Western Electric Co. Members of the Executive Committee holding over from 1934 to the end of 1935 are: Sydney Hogerton, general plant manager, Long Lines Department, American Telephone and Telegraph Co., and E. V. Cox, assistant vice-president, American Telephone and Telegraph Co.

Asks New Hearings

Ultimate disposition of the 10-year old Ohio Bell Telephone rate case was delayed and repayment of $12,000,000 alleged over-charges to the company's patrons was blocked when the telephone company requested new hearings in the case.

The attorneys for the telephone company specifically requested a new hearing to examine and analyze "some instructions" given to E. W. Wood, commission accountant, whose figures were used to determine the amount of alleged overcharges.

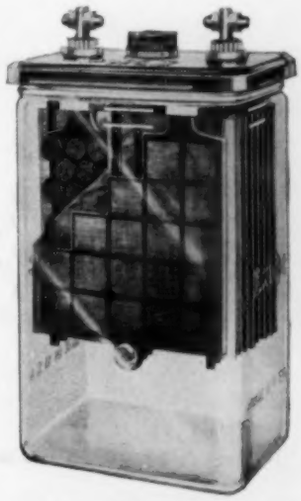
The commission, on the basis of Wood's report, ordered that $12,000,000 should be refunded to the company's patrons in 55 Ohio communities.

A record price for a telephone in Manchuria was seen in Hsinking recently, when a contractor paid 1,230 yen ($355.00) for a telephone number.

RESERVE POWER WHEN NEEDED

Exide Telephone Batteries installed in your exchange is assurance of a steady flow of current when needed. The operation of storage batteries is not interfered with by fluctuations or interruptions in the A-C circuits. During emergencies they will help to keep the majority of lines in service.

Whether floated or cycle charged; whether the work is heavy or light, Exide Batteries mean reliable service. There is an Exide Battery for every telephone job —common battery, emergency reserve, signalling or P. B. X. Because reliability is a determining factor, Exide Telephone Batteries are in wide use throughout the world.



Typical cell of the Exide Chloride Battery showing its construction

Exide
BATTERIES
FOR EVERY TELEPHONE USE

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
The World's Largest Manufacturers of Storage Batteries for Every Purpose
Exide Batteries of Canada, Limited, Toronto

RAMBLEGRAPHS

By J. A. Smith

Found that F. W. Coffing of the Coffing Hoist Company, Danville, Ill., had increased his facilities by adding another building, thus improving the appearance as well as the efficiency of his organization. Mr. Coffing has enjoyed a very nice business all along and we are glad that he has found it necessary to enlarge his facilities in order to take care of the ever increasing orders.

* * *

Paid our respects to the Suttle Equipment Company at Lawrenceville, Ill. This concern is mailing out a new catalog and is adding new items to those already carried. Reports that nice increase in business at Suttle's were made by the management and salesmen who were holding a meeting.

* * *

While a visit was made to Mt. Vernon, Illinois, it was not for the purpose of visiting the telephone company, but of a more personal nature. It was the very good fortune of Rambler to make the acquaintance of the pastor of the First Methodist church of that enterprising city when that divine was pastor of Wesley Methodist church in Chicago. Rambler and the missus felt highly honored that this pastor invited them to his home and introduced them to his congregation as members of merit.

* * *

Reached Louisville, Kentucky, on the last day of the convention of the new association organized in that state and met a number of the telephone fraternity. W. H. Bryant of Mobile, Alabama, was exhibiting a picture of the last convention of telephone men in Louisville 17 years ago. Brought back recollections of former friends, whom the writer well remembers. Scanning the picture closely he discovered his own likeness in the assembly, but we must confess that we have lost some of the hair that adorned our cranium since "the good old days" —which we hope never returns — we mean times and not hair adornment.

* * *

Stopped over at French Lick Springs to tank up in anticipation of a blowout later on. Beautiful place to spend a few days rusticating for one's health.

* * *

That fellow Berry—you know who I mean—L. M. Berry of Dayton, just will not let a little thing like a depression stop him; if a few of his city directory projects show an inclination to slow down, why, he just goes out and finds a bigger and better one to take its place. Down at Louisville we found a crew of men working on a telephone directory for that city—the Southern Bell, on a contract recently annexed by that wide-awake organization over at Dayton.

* * *

D. B. Corman, salesman for the Kellogg Switchboard & Supply Co. in the Kentucky territory, told us that T. DeWitt Talmage, former engineer for the Illinois Telephone Association and a former writer for TELEPHONE ENGINEER, was making good on his job down at Chattanooga, Tenn., where he is in the employ of the TWA organization. Everybody knew Talmage would make good, but just the same it makes us feel good that even your Uncle Samuel recognizes the extraordinary ability of our old Illinois friend.

* * *

Met a number of high class telephone men at the Kentucky meeting and extended our acquaintance to the extent of getting our checks endorsed when passing thru that state. We'll be telling you about these gentlemen in a later issue. A number of salesmen from other states attended the organization meeting both at Louisville and Charleston, W. Va.

* * *

At Charleston, we enjoyed visits with a number of readers of TELEPHONE ENGINEER for many years. Ramblegraph page made it easy for telephone men to recognize the form and physique of this gentleman. Those who were not already readers of this publication will keep up with the doings in the industry thru TELEPHONE ENGINEER in the future.

* * *

At York, Pa., we visited one of the best equipped exchanges on our rounds. You probably know that York is a manufacturing city, yet it is situated in one of the prettiest sections of Pennsylvaina and considerable farming is indulged in. The general manager, G. B. Rudy, informed us that during the depression he only lost about 12% of his subscribers, and was, therefore, slow in regaining them. Nevertheless no stone is left unturned to bring back those who found it necessary to discontinue service and to add others to the list. The belief was expressed that the coming year would bring back a goodly number of subscribers.

Kentucky, West Virginia Association Formed

Two new state Independent telephone associations were formed in October. The Kentucky Independent Telephone Association was organized at a meeting on October 25 and 26 in Louisville. The West Virginia Independent Telephone Association was formed on October 29 and 30 at a meeting in Charleston.

The following were elected officers to serve the Kentucky Association: president, C. H. Moore, Glasgow; vice-presidents, J. A. Sullivan, Lexington; John Bircher, Brandenburg, D. P. Newell, Maysville, and secretary-treasurer, J. R. Mathews, London, according to a report from Secretary Mathews.

Officers elected by the West Virginia Association were: president, J. M. Bear, Marlington; vice-president, H. H. O'Neal and secretary-treasurer, C. J. McMahon, Wayne.

Speakers on the program of the organization meeting included Judge J. D. Preston, West Virginia Public Service Commission; Dr. C. L. Jones, secretary, Athens (Ohio) Home Telephone Co. and A. Bliss McCrum, secretary general, West Virginia Utilities Association. A follow-up meeting will be held in the near future. It is expected that the Association will have a 100 per cent membership of Independent telephone companies in the state.

Others attending the West Virginia meeting were C. C. Deering, secretary, and W. H. Bryant, field secretary, United States Independent Telephone Association; Dr. A. F. Holmes, Athens (Ohio) Home Telephone Co.; J. E. Finley and J. C. Snyder, Stromberg-Carlson Telo. Mfg. Co.; D. B. Corman, Kellogg Switchboard and Supply Co.; J. H. Watkins, Automatic Electric Co.; Frank L. Eldridge, Ray-O-Vac Co.; W. A. Pankey, Bluefield (W. Va.) Telephone Co., and J. A. Smith, TELEPHONE ENGINEER.

Bell Gains Stations

The American Telephone & Telegraph Co. reported an increase of 33,200 telephones in service throughout the Bell system in October, 1934. The gain in October, 1933, was 13,400 .

TRUE STORIES OF FARM TELEPHONES FOR FARM PAPERS

TELEPHONE advertising in national and sectional farm publications is based on actual incidents reported by rural subscribers. Told simply, directly, these little stories have a convincing quality all their own. Each features one specific use of the farm telephone and lists other reminders of its constant value to the farm family. • The advertisement on the opposite page is representative. Written from the very lives of those who read it, this advertising should serve to keep and create rural traffic for all the telephone industry.

AN ADVERTISEMENT OF THE BELL TELEPHONE SYSTEM

R. G. Roadstrum Elected Illinois President

R. G. Roadstrum, secretary-treasurer, Intra State Telephone Co., Galesburg, was elected president of the Illinois Telephone Association at its 30th annual convention held at Peoria, October 18 and 19.

A. R. Bone, secretary-treasurer, Illinois Bell Telephone Co. was elected vice president and A. J. Parsons was re-elected secretary-treasurer.

Directors re-elected were Mr. Bone, C. R. Brown, vice-president in charge of operations, Illinois Commercial Telephone Co.; Donaldson Coombes, connecting company agent, Southwestern Bell Telephone Co.

E. D. Glandon, secretary and manager, Pike County Telephone Co.; J. G. Hardy, commercial superintendent, Illinois Commercial Telephone Co.; Dr. R. E. Gordon, president and manager, El Paso Telephone Co.; H. A. Joslyn, secretary and general manager, DeKalb-Ogle Telephone Co.; H. G. Lankford, general commercial agent, Illinois Bell Telephone Co.

R. A. Lumpkin, president, Illinois Southeastern Telephone Co.; J. H. Dial, general manager, Illinois Telephone Co.; Louis Pitcher, secretary and general manager, Dixon Home Telephone Co.; Mr. Roadstrum; Dr. J. G. Schwartz, secretary-treasurer, Jerseyville Telephone Co.; and Earl Stice, general manager, National Trail Telephone Co.

New directors elected to the board are: C. F. Melick, manager, Eureka Telephone Co.; J. I. Kennedy, president and general manager, Northwestern Telephone Co., and R. B. Still, Bloomington.

Speakers on the program included the retiring president, J. G. Schwartz, Jerseyville Telephone Co.; Ben B. Boynton, general counsel of the association; Secretary Parsons; President F. B. MacKinnon, U. S. Independent Telephone Association; Irvin Rooks, attorney, Illinois Commerce Commission; Dr. Horace Gray, department of philosophy, University of Illinois; C. E. Hapin, supervisor, Illinois Tax Commission; Paul Mathias, legal department, Illinois Agricultural Association; Melvin Purvis, U. S. Department of Justice, and Dr. J. O. Perrine, associate editor, Bell System Technical Journal.

In connection with the convention the annual traffic conference was held. The conference was presided over by Mrs. Mayme Workman, traffic supervisor of the association.

Speakers on the program were Dr. R. E. Gordon, president, El Paso Telephone Co.; D. C. Porter, Illinois Bell Telephone Co.; Anne Barnes, chief operator, Iowa Independent Telephone Association; Myrtle Ray, Illinois Commercial Telephone Co.; Byrd Weaver, Pike County Telephone Co.; Annie Romine, Illinois Bell Telephone Co.; Ida Mae Nitz, Geneseo Telephone Co.; Kathleen Taylor, Middle States Telephone Co.; Marie Hall, Jerseyville Telephone Co.; Florence Welch, Illinois Southeastern Telephone Co.

Agnes Bruins, Northwestern Telephone Co.; Edna Sauer, Middle States Telephone Co.; Agnes Davis, Illinois Consolidated Telephone Co.; Myrtle Henninger, Illinois Bell Telephone Co.; Anna Jungers, Illinois Commercial Telephone Co.; Irene Goodall, Illinois Telephone Co.; Eva Frazier, Illinois Commercial Telephone Co.; Margaret Sullivan, Southwestern Bell Telephone Co.; Edith Smith, Illinois Valley Telephone Co.; Margaret Holmes, Western Illinois Telephone Co.; Marion Alberts, Illinois Bell Telephone Co.; W. H. Schrupp, Iowa-Illinois Telephone Co.; L. F. Shepherd, Illinois Commercial Telephone Co., and Eleanor Cleary, Illinois Bell Telephone Co.

Rate Credit For Telephones On Farms Sought

It is understood that those interested in seeing a credit in fire rates granted for a telephone on the premises of farms are not disposed to drop the matter, and will this fall make a stronger bid than ever for such recognition. Farmers, agents writing farm insurance, and telephone companies giving rural service are more or less uniting their efforts to secure it. They cite many cases when the spreading of the alarm by telephone companies has brought help quickly and greatly reduced the farm loss. Neighbors for miles around hear the alarm, and, coming in their automobiles, bring pails, blankets, etc., and help to put out the fire, or keep it from spreading to other buildings. Fire departments have also been called from neighboring towns by telephone and in many cases have prevented heavy loss.

Undoubtedly there will be an insistent demand that credit be given by the fire insurance rating bodies in the near future. Several methods have been proposed for recognizing the fire protection value of a telephone. First, to give a direct credit of, say 5 to 10% in the rate; second, to provide a charge for the absence of a telephone; and, third, to attach a warranty to the policy, providing that a telephone be maintained and that if, when a loss occurs, there is not telephone service, the amount paid to the insured will be reduced by, say 5 or 10 per cent.

Cliff C. Jones, president of R. B. Jones & Sons, Kansas City, points out that so many farmers and suburban dwellers have ordered their telephones discontinued that a number of the agencies, especially in farm writing departments, are alarmed about the situation, inasmuch as many fires have been extinguished on farms by calling for help over telephones. Mr. Jones quotes a number of farm writing agents as to the value of telephones including Rosse Case of Marion, Kans., and Herman Fricke, Jr., Madison, Nebraska.

Albert Menard of Macon, Ga., reports that in Columbus, Ga., the percentage of loss from fires reported by telephone alarms in 1931 was 1.6% and in 1932, 1%. The percentage of loss from fires reported by fire alarm boxes in 1931 was 3.9%, and in 1932, 3%, indicating that prompter response is obtained by telephone. In Macon, Ga., the percentage of losses from fires reported by telephone alarm in 1931 was 5% and in 1932, 7%. The percentage of losses from fires reported by fire alarm boxes was 8.9% in 1931, and 15.7% in 1932.

One objection which has been raised to giving farm properties credit for telephone fire protection is that if credit were given, it would also have to be given to city properties equipped with telephones. This is not the case, Mr. Jones states, as is shown by the credit for lightning rods, which is given to farm properties, but is not given to city properties. A charge is made for tenant occupancies in farm rates, and no such charge is made in city rates. Many charges and credits are given to city properties which are not given to farm properties. There is a common impression that the telephone companies object to handling fire alarms Mr. Jones asserts. On the contrary, most telephone companies have accepted the responsibility and contribute much to fire prevention and loss reduction by including in their directories instructions to both employees and subscribers for the handling of fire alarms.—*The National Underwriters.*

Michigan Bell Elects

Directors of the Michigan Bell Telephone Co. have elected Burch Foraker chairman of the board. Mr. Foraker has been president since 1925. G. M. Welch, formerly vice-president and general manager, was made president, and T. N. Lacy, chief engineer, was made vice-president and general manager in charge of operation.

Something like 5,000,000 trees are cut annually for telegraph and telephone poles, and we use 40,000,000 fence posts every year, according to the American Tree Association.

How To Run Better Sales Contests

(*Continued from page* 17)

one company used a simple corner card reading: "Coach Sid Harvey, Training Headquarters." You can add to the interest of an otherwise dull letter by using a gummed label. A thousand gummed labels to use in a contest only cost $3 or $4 and add interest to any letter.

The material that goes into follow-up letters should run the whole range of personal emotions. It can reflect amazement, embarrassment, enthusiasm, admonition, encouragement, humor, personal pride, shame. It can regret, it can review, it can emphasize, and it can reflect all the situations.

Progress Chart

A wall chart is the most important single piece of showmanship in a contest. Wherever possible, symbolize the progress of your contest with a dramatic chart of some kind. Put this in the story of the contest by tying it in with the central theme. Make it large, make it colorful; color attracts attention and retains interest. Put something new on it. Use the chart even if the men can't see it. A mental picture is better than none at all, and it is important to have the men know that the management has a graphic picture of what they are doing. If the men can't see the chart, take pictures of it and mail copies of it to them, and make small reproductions of it from time to time and send them out.

Let us consider the need for originality in the handling of a progress chart. Give the blackboard a rest. However, do not use a flat wall chart for every contest either. Inject some other dimensions, such as a horizontal table. One company strung wires across the office and hung the automobile racers from these wires, draped them square across the room. The use of scenery or props is quite important in the dramatization of your progress chart. Somebody in your organization should be delegated the job of keeping this chart up to date.

Planned Progress

Any goal can be reached more surely if a measured daily map of progress is set up. It should not only show the progress of the individual men or groups, but should also record the movement of the organization. A tremendous amount of interest can be aroused around this one feature. I remember one good job done in this respect by a New York division of the Associated Gas & Electric Co. A bulletin was sent out every day for a month. The bulletin showed the days elapsed, days to play, percent of quota reached, etc. This series was so skillfully handled that I, who am supposed to be hard boiled when it comes to sales contests, actually hurried through my dinner to finish reading the series and find out whether Empire made its quota. Empire did!

(To Be Continued)

O. B. Bourn, Kellogg Branch Manager, Dies

O. B. Bourn, manager of the Kansas City branch of the Kellogg Switchboard and Supply Co., passed away suddenly Sunday, November 11. The announcement of his death came as a shock to his many friends, especially so, since no serious illness preceded his death.

Mr. Bourn attended high school at Marshall, Mo., and completed normal school at Kirkville, Mo. His warm personality and outstanding character will be long remembered by the many friends he made and kept during his 37 years association with us in the telephone field.

He began his long and successful career in the field of telephony as an operator in 1897. Not long after his first position, he was made trouble man and then in succeeding advancements he became substation installer, P. B. X. installer, central office installer, wire chief, and finally district manager. These positions were with Independent companies operating in Missouri, Kansas and Iowa and with the Southern Bell Telephone and Telegraph Company.

This wide and varied experience proved invaluable in his later work with Kellogg and in helping him establish his many fine acquaintances throughout the field. Succeeding these positions he joined the Interstate Commerce Commission for eight years as assistant senior telephone and telegraph engineer for the Kansas City district. In this capacity he supervised the physical inventory and valuing of telephone and telegraph properties on 60,000 miles of railways.

In 1925 Mr. Bourn associated himself with the Kellogg company as a salesman. A year later he was put in charge of the Kansas City Service Department and in 1931 he was made the Kansas City branch manager, the position he held at the time of his death.

Mr. Bourn's excellent work and his ability to achieve results made him invaluable to his company who together with his many friends realize that his passing leaves a void that cannot be filled.

Utility Value Cut In Missouri

The Missouri state tax commission recently recommended a $9,626,998 cut in the valuations of public utility corporations operating in Missouri for 1934 taxes.

Total valuation of all the companies was fixed at $457,144,763, compared to a total of $466,771,761 on which the concerns paid taxes a year ago. The decrease would mean a savings of approximately $144,000 to the utilities if the recommendations are adopted as final by the board of equalization.

Railroad companies continue to hold their place as the largest utility classification, their property in the state being valued at $234,849,062 this year, compared to $238,745,859 or a cut of $3,896,797.

The Southwestern Bell Telephone Co., however, took the lead as the most valuable single utility property, its assessment standing this year at $37,016,088 compared to $37,214,765 a year ago. Last year the Missouri Pacific railroad held the lead with a valuation of $37,756,128, which was dropped by the tax commission to $36,966,516 this year.

The Kansas City Public Service Co. received a cut of 1 million dollars, its valuation being fixed at 9 million this year compared to 10 million last year.

The Kansas City Power and Light Co. valuation increased from $22,683,977 to $22,912,613 for this year's taxes.

The St. Louis Public Service Co., operating the street railways and busses there, received a cut of 2½ million dollars, dropping from 25 million to 22½ million.

A recapitulation showed the classification of valuations compared to a year ago:

Street railways, $33,232,920 for this year, compared to $36,880,630 a year ago; decrease, $3,647,710.

Bridge companies, $6,377,757, compared to $6,930,107; decrease of $552,350.

Pipe lines, $34,273,555, compared to $35,828,952; decrease of $1,555,397.

Telegraph companies, $7,159,137, compared to $7,141,547; decrease of $17,590.

Electric light companies, $91,000,916, compared to $90,606,301; increase of $394,615.

Telephone companies, $50,251,416, compared to $50,638,365; a decrease of $386,949.

There are 317 operating utility companies in Missouri.

Kellogg Equipment Serves California Resort

Coachella Valley Home Telephone & Telegraph Co., Thermal, California, recently completed the installation of a Kellogg 100-line common battery P.B.X. switchboard and Kellogg Masterphones throughout the exclusive La Quinta Hotel which is located about 13 miles from its main office.

The Coachella Valley is fast becoming world renowned for its wonderful winter climate. During the last quarter of a century it has been transformed from a desolate desert waste to one of the garden spots of America—and the telephone has played no little part in this transformation. The Coachella Valley Home Telephone & Telegraph Co. was incorporated in March 1906 for the purpose of giving telephone service to a few desert settlers in the Valley. During its early existence it was necessary for each person desiring service to subscribe for $100.00 of the capital stock of the company.

Through many difficulties, financial and otherwise, the company has continually maintained its service, and has grown until it now has 160 miles of pole line and over five miles of cable, and is servicing an area 30 miles long and 12 miles in width. It also has a two-position Kellogg switchboard in Thermal, its main office.

Although the company has maintained its entire plant in excellent condition, it has no bonded debt, and has an investment of over $65,000.00 in its plant and equipment. Much credit for the success of this company is due to the untiring efforts and faithful endeavors of its operating officials, W. D. Gibbs, Secretary and J. W. Newman, Manager.

The La Quinta Hotel with its individual guest bungalows, is built after the fashion of a Mexican hacienda. Its gleaming white buildings and red tiled roofs, its welcoming porches and patio, remind one of early California but its luxurious appointments and service are most modern. It is well known to high-class winter tourists. Its patrons, although otherwise practically isolated from the world, must be in quick and direct connection with their offices, brokers, stock exchange, and their other business affairs, and they must have dependable telephone service.

The new Kellogg board is equipped with 70 common battery line circuits, six double lamp supervisory cord circuits with ringing, listening, and ring-back keys, and three jack ended trunks to the telephone company's main exchange. The battery equipment consists of 11 cells of Exide BTE-7 sealed type storage batteries which are charged and controlled by a No. 1-A Kellogg Power Unit which also includes a pole changer and ringing transformer.

Hertz Promoted

Copperweld Steel Co., Glassport, Pa., announces the appointment of Stanton Hertz as vice president and chief engineer. Mr. Hertz, for the past 14 years, has been with Copperweld Steel Co., starting as electrical engineer. In 1927 he was appointed general sales manager.

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912,

of Telephone Engineer, published monthly at Chicago, Illinois, for October 1, 1934.

State of Illinois, County of Cook, ss.—Before me, a notary public in and for the State and county aforesaid, personally appeared J. A. Smith, who, having been duly sworn according to law, deposes and says that he is the business manager of the Telephone Engineer, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—Telephone Engineer Publishing Co., Chicago, Illinois.

Editor—Ralph C. Reno, Chicago, Illinois.

Business Manager—J. A. Smith, Chicago, Illinois.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address as well as those of each individual member must be given.

Telephone Engineer Pub. Co., Chicago, Ill.
Mrs. Florence J. Beyer, Chicago, Ill.
F. A. Bowdle, Wheaton, Ill.
F. O. Cuppy, Lafayette, Indiana.
Mr. and Mrs. P. Kerr Higgins, University City, Mo.
C. L. Jones, Athens, Ohio.
Agnes M. Leffert, Goshen, Ind.
J. A. Smith, Chicago, Ill.
Mrs. J. A. Smith, Chicago, Ill.
Walter J. Uhl, Logansport, Ind.
Mrs. Walter J. Uhl, Logansport, Ind.
D. Weiner, Chicago, Ill.
John H. Wright, Jamestown, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding one per cent or more of total amount of bonds, mortgages or other securities are: (If there are none, so state.)

P. Kerr Higgins, University City, Mo.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

J. A. SMITH,
Business Manager.

Sworn to and subscribed before me this 28th day of September, 1934.

(Seal) ALBERT H. WITTHOFT,
Notary Public.

(My commission expires March 31, 1938)

Spangler Appointed By National Carbon

John M. Spangler, who as "Jack" Spangler is personally known to hundreds of officials and salesmen throughout the country in the railroad, electrical, hardware, radio and automotive fields, has been made general sales manager of National Carbon Company, Inc., according to an announcement just issued by the company.

The promotion is the latest of a series of advances which began almost with Mr. Sangler's initial connection with the National Carbon Company in 1915. Previous to that, he had devoted two years, following his graduation from Penn State College, to railroading with the New York Central, where he was connected with the signal department, chiefly in Albany and Rochester, N. Y.

His effort to get wider sales experience, and his transfer to National Carbon, led to his assignment as a salesman in the company's railroad department. Three years later he had risen to the managership of the railroad division at Cleveland.

In 1923, Mr. Spangler went to Chicago to take over the direction of western division sales. A few months later he became manager of the western division, one of the three national organization units of the company. He remained in Chicago in this capacity until 1930, when he took over the management of the eastern division.

HIT POLITICAL SIGNS ON POLES

Telephone linemen dread a political campaign. Candidates tour the country seeking prominent places to tack up placards and almost all of them pick telephone poles as the background for their activities.

The zealous candidate uses plenty of big tacks in fastening his picture to the pole. It is these tacks that break legs for the linemen—sometimes months after the election is over. The lineman climbs a pole by driving a spur into the wood as he mounts. When a spur and a tack come together it frequently means a serious fall. Then, too, rusty tacks and nails in poles cause cuts and scratches on workmen's hands that quickly become infected. Orders have been sent out to linemen to remove all placards and tacks from telephone poles in Kansas.

Buettell With Ideal

The Ideal Commutator Dresser Co. announces that M. A. Buettell, formerly with the Dodge Manufacturing Corp., has joined the Ideal Staff as electrical engineer.

F. C. Goodwin Jr. Secretary Rochester Company

Fred C. Goodwin Jr. has been elected secretary of the Rochester (N. Y.) Telephone Corp. by the board of directors. He succeeds the late William J. O'Hea.

Goodwin has been with the Rochester Telephone Corp. since August, 1923, when, following studies in business administration at the Wharton School of Finance, he took a routine position in the commercial department. His father is chairman of the board.

After broadening his experience in other departments, Goodwin was appointed assistant to John P. Boylan, president of the corporation, in 1933.

B. L. Fisher Heads New Va. Association

B. L. Fisher, president, Lee Telephone Co., Martinsville, was elected president of the newly formed Virginia Independent Telephone Association which was organized on November 1 and 2 in Richmond.

Other officers elected were: vice-president, Charles C. Ward, Charlottesville, and secretary-treasurer, G. Fred Switzer, Harrisonburg. The board of directors include these officers and R. M. Coggin, Warsaw; J. S. Wiley, Lorton; W. A. Pankey, Bluefield, W. Va., and W. N. McAnge, Jr., Bristol, Tenn.

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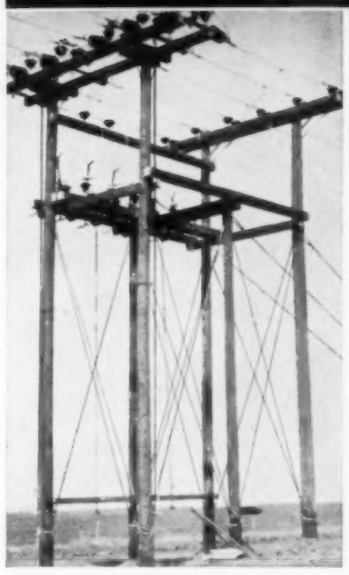

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Indiana Steel & Wire Co.
Muncie, Indiana

(*Left*) Switching station, Northwestern Public Service Co., Huron, South Dakota. Guyed with *Crapo* Galvanized Seven Wire Steel Strand.

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U. S. Rubber Announces New Insulation

Laytex, a new and revolutionary dielectric, is announced by the United States Rubber Co., 1790 Broadway, New York.

An idea of the features of Laytex may be quickly conceived from a few of the many important claims made for it. As for example, it is said that Laytex is the most flexible, has the greatest tensile strength and resistance to compression, has the highest dielectric strength and insulation resistance, permits thinner but superior walls which make possible finished conductors lighter in weight and smaller in bulk.

Laytex is derived directly from latex, the milk of the rubber tree. It is maintained in its natural liquid state until the very last manufacturing process, which converts it into a solid dielectric, perfectly and uniformly applied, it is said, and it is a non-coagulated, non-milled dielectric, purified to remove proteins, sugars and water solubles, and therefore is the possessor of unique physical and electrical characteristics.

To these features is added the utilization of the physical law of gravity in the mechanical method by which the liquid is applied to a conductor to assure that conductor of being perfectly centered in the dielectric.

Laytex is deposited from liquid form upon a conductor by the dip or pass method. The dip or pass method of insulating consists of running a conductor through a series of baths of liquid, depositing upon the conductor, with each dip, a film of dielectric which is almost immediately converted from liquid to solid. As the conductor travels vertically, any excess liquid flows back to the container.

The liquid is solidified on any given section or length of conductor before that section or length is in physical contact with any mechanical support, and, because of this, mechanical defects are avoided. It is claimed the results of this process of insulating are perfect centering of conductor, and uniform wall thickness of dielectric.

Information on Latex may be secured by writing to the United States Rubber Co.

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C-A-X Service at Tigerton, Wis.

The Tigerton, Wis., telephone exchange of the Urban Telephone Co., Clintonville, Wis., was recently cut over to full automatic service.

The Urban Telephone Co.'s headquarters exchange at Clintonville was changed to automatic operation in May 1930, followed by another automatic installation at its Bowler exchange in September, 1932. In April, 1933, Caroline was changed to a remote control basis of operation with a Strowger R-C-X board. All of these properties, including Tigerton, with the exception of Clintonville, are unattended and are supervised by the same man who handles the Clintonville exchange.

The C-A-X installation at Tigerton consists of 100 lines of switch-type equipment with automatic trunking facilities being provided between Bowler and Tigerton and with toll lines being handled at the Marion exchange of this same group. Full automatic service is furnished to individual and two party lines on a full selective basis, and 10 party lines on a semi-automatic code ringing basis.

It is the ultimate aim of the management of the Urban Telephone Company to convert their entire property to automatic operation and plans have been formulated to carry out this project. John Spengler has been responsible for the development of these properties.

In addition to being one of the foremost telephone men in the state of Wisconsin, Mr. Spengler is also an attorney and has won wide recognition with his ability in both professions. H. E. Bovee, local manager, has been in charge of these properties and credit is due him for the excellent service furnished to telephone users in this area.

Ohio Rate Case

The power of the Ohio State Utilities Commission to force the return of alleged excessive telephone rates is exclusive, the Ohio supreme court has held, in issuing a writ of prohibition to prevent Common Pleas Judge George P. Baer, Cleveland, from appointing a receiver to begin immediate disbursement of excess rate the commission has held were collected by the Ohio Bell Telephone Co.

New Items

(Carried regularly in stock)

Switchboard Cable
No. 17 Acorn drop wire
No. 19 Interior duplex
No. 19 Interior triplex
Cords
(Telephone & swbd.)
Switchboard plugs
(T.F.A.)
Receiver shells and caps
Mouth Pieces

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6 Ft.	3 Cond. Desk Stand Cord —Tip and Spade, Tip and Tip, Spade and Spade.	25c
6 Ft.	4 Cond. Desk Stand Cord Any Trim.	35c
6 Ft.	5 Cond. Desk Stand Cord Any Trim.	45c

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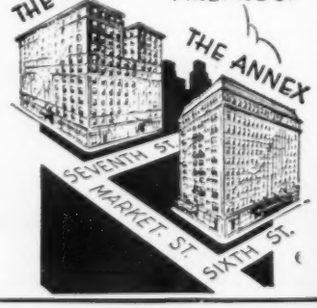
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